UK MET OFFICE
GLOBAL DATA MONITORING REPORT

August 2004

Data Assimilation
Meteorological Office
Fitzroy Rd
Exeter
Devon
EX1 3PB

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

Comments or queries on the report are welcome and should be addressed to:-

Mr. D. Richardson
Observations Data Monitoring Group
Met Office
Fitzroy Road
Exeter
Devon
United Kingdom
EX1 3PB

2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics (**Geopotential Height and Windspeed at 100 and 500 hPa**) for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).
:Air temperature (Degrees C).
:Relative Humidity (%).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)
:15 degrees (air temperature)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 $m\ s^{-1}$	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
	≥ 4 degrees	(air temperature)
	≥ 15%	(relative humidity)
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
	≥ 6 degrees	(air temperature)
	≥ 25%	(relative humidity)
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

```
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

AVOSTEST       P         226    100    100
A8CK2          P          59      0     49      1.0       4.6       4.7
A8FA5          P          44      0     98      2.1       4.9       5.3
CG2522         P         537     42    100      4.9      -3.4       6.0
CG2992         P         534     26    100      3.4      -3.0       4.5

C6FV3          P          45      0      0      0.8       8.0       8.0
DQVI           P          51      0     67      1.0       4.9       5.0
DQVM           P          25      0      0      0.7       4.3       4.3
ELWD5          P          51      0      6      1.0       5.6       5.7
H9LA           P          20      0     60      0.8      -4.4       4.4

KAO107         P          24      0    100      1.6       7.4       7.6
KMJL           P          23      0      0      0.5      -4.0       4.1
KS005          P          35      0      0      0.6      -4.0       4.0
OZTS2          P          41      0      2      1.1       4.0       4.1
PGON           P          56     29     79      3.3      -2.1       3.9

P3NK5          P          20      0      0      1.2      -4.8       5.0
TEST           P          55    100    100
UAMY           P          23      4     48      5.4      -5.2       7.5
UAXG           P         110      0     25      1.6       4.0       4.4
UBAU           P          69      0      6      2.2      -4.2       4.7

UCTZ           P          28     21    100      5.6      -6.9       8.9
UETM           P          20      0     40      2.3      -5.3       5.8
VQGQ4          P          46      0     11      3.9       4.3       5.8
VVKV           P          23      0     87      0.8      -4.4       4.4
WADZ           P          25      4     24      4.1       4.4       6.0

WCY7054        P          32      0     84      1.5       6.2       6.3
WMLG           P          22      0     23      1.3       5.5       5.6
ZCAS2          P          58      0     10      2.4       4.6       5.1
ZDFK7          P          69      0     52      1.3       4.7       4.9
ZNQO3          P          21      0     71      1.9       4.0       4.4

ZSDN           P          20      0     70      1.1       5.2       5.3
62166          P          65      0     68      4.0       4.6       6.1
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

DGZO          SPEED       55      0     82      3.1       6.0       6.7
DPTL          SPEED       63      0    100      6.6       5.8       8.8
KRGB          SPEED      561     11     38      7.0       5.9       9.2
VNVG          SPEED       28      0    100      4.6       6.0       7.5
V2JZ          SPEED       20      0    100      3.5       5.6       6.6

V7CZ6         SPEED       21      5     19      5.1       5.7       7.7
3FEI6         SPEED       59      0     14      3.1       5.2       6.0
44138         SPEED      714      0    100      2.9      -6.7       7.2
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

AVOSTEST      DIRN.       29      0      0     15.4     *****     134.4
CGDT          DIRN.      114      0      0     60.8      32.7      69.0
PFAS          DIRN.       21      0      0     33.6     -30.6      45.5
VOCJ          DIRN.       46      0      0    110.1       0.8     110.1
VTXK          DIRN.       23      0      0     38.1     -36.1      52.5

23101         DIRN.       81      0      0     69.5      41.0      80.7
4XIS          DIRN.       20      0      0     38.7     -31.7      50.0
IDENTIFIER    ELEM      NOBS    PGE   %REJ       SD      BIAS       RMS

DEOT           T         129      2    100      2.6       5.3       5.9
KUU619         T          24      0    100      1.9       5.8       6.2
OWDD           T          25      0    100      2.5       4.0       4.7
TEST           T          57     81    100      4.9      -5.6       7.5
UCJR           T          28      0    100      3.0       5.5       6.2

UCTP           T         104      0    100      3.9       4.8       6.2
UETM           T          20      0    100      0.8       5.0       5.0
UGGA           T          36      6    100      3.8       5.3       6.6
VCTV           T          26     42    100      2.4       2.8       3.6
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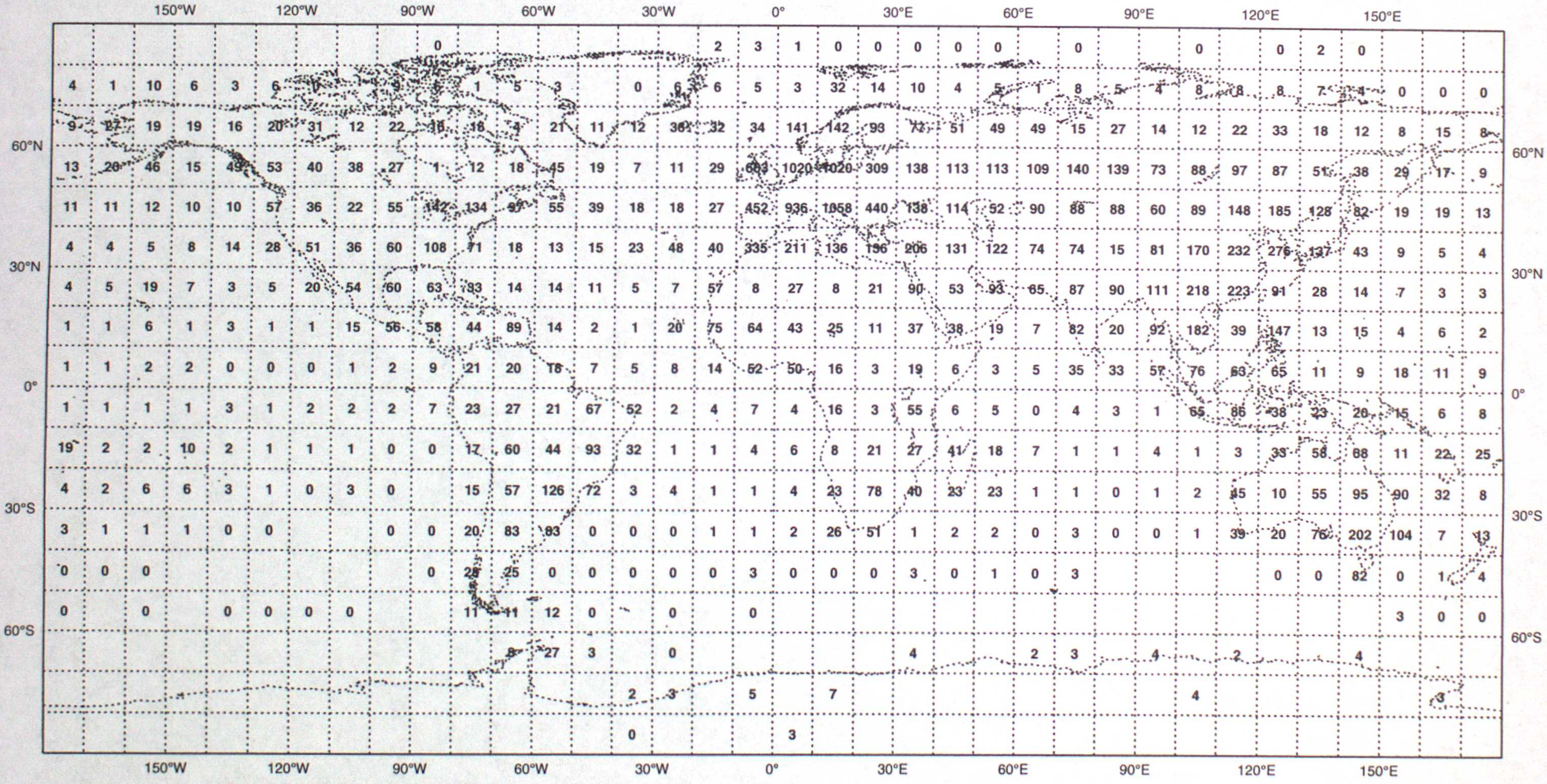
WCW9126	T	114	25	100	4.3	9.9	10.8
WCY2920	T	53	6	100	4.6	6.2	7.7
WDA3588	T	318	6	100	4.6	4.2	6.2
WDB6493	T	76	28	100	3.4	8.9	9.6
WWU8	T	24	54	100	1.3	13.2	13.3
WYM9567	T	30	17	100	3.2	10.1	10.6
45141	T	386	0	100	1.6	8.8	9.0
45144	T	706	0	100	2.3	6.5	6.9
45150	T	704	0	100	1.7	6.5	6.7
46042	T	70	0	100	0.9	4.9	4.9
46088	T	385	11	100	3.8	-5.4	6.6

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
DFPC	RH	92	0	100	10.6	25.3	27.5
FNAT	RH	29	0	100	5.0	17.3	18.0
OUEW	RH	162	0	100	21.6	-23.4	31.9
VNZJ	RH	33	0	100	8.4	15.6	17.7
VRZZ5	RH	56	0	100	9.5	-15.1	17.8
44017	RH	70	0	100	6.2	-73.3	73.5
46054	RH	235	0	100	10.6	17.5	20.5
46087	RH	474	0	100	12.9	15.0	19.8
46088	RH	385	0	100	23.5	28.1	36.7
62166	RH	65	0	100	16.9	16.4	23.6

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8BZ6	SST	68	0	100	1.7	-4.9	5.1
A8CF2	SST	32	3	59	1.3	-4.2	4.4
A8CG3	SST	43	0	100	2.3	-3.5	4.1
CGHL	SST	28	0	61	3.0	3.2	4.4
CG2522	SST	58	86	352	2.5	0.1	2.5
C6QF6	SST	42	0	100	1.4	3.5	3.7
ELZH9	SST	31	0	100	2.5	5.1	5.7
FNJI	SST	58	0	100	2.4	4.0	4.6
HOMQ	SST	24	0	100	1.0	3.0	3.2
KCB53	SST	26	0	62	2.9	3.4	4.4
KHRC	SST	37	0	62	0.9	-3.1	3.2
KHRP	SST	35	0	49	1.1	3.3	3.4
KRHX	SST	43	0	58	1.9	-3.9	4.3
KRNJ	SST	30	0	63	1.2	-3.6	3.8
KRPD	SST	53	0	32	1.7	-3.2	3.7
KUU619	SST	23	74	100	1.1	8.6	8.7
SWLC	SST	30	0	100	1.6	-4.4	4.7
TEST	SST	29	100	186			
UAJS	SST	25	0	100	0.9	-5.6	5.6
UASX	SST	106	0	74	2.4	-4.5	5.1
UBLX	SST	32	3	106	1.6	-5.9	6.1
UCBM	SST	24	0	100	1.8	-3.8	4.2
UCJR	SST	26	0	65	2.7	5.2	5.9
UCOR	SST	32	0	100	1.5	-6.2	6.3
UCTZ	SST	28	0	100	3.1	-5.5	6.3
UGTV	SST	20	25	25	1.1	0.7	1.3
UHOM	SST	38	0	100	0.9	-3.0	3.2
UHQP	SST	48	0	71	1.5	-3.5	3.8
VJRB	SST	21	0	100	0.9	-3.1	3.3
VLTT	SST	72	100	104			
VQHO7	SST	25	0	52	2.3	-3.4	4.1
VVKV	SST	22	0	73	2.5	4.3	5.0
V2AI7	SST	26	0	100	3.9	3.6	5.3
3EHT6	SST	30	0	10	0.4	3.5	3.5
3EMQ9	SST	44	0	52	0.7	-4.1	4.1
3FKM8	SST	34	0	100	1.6	-3.3	3.7
3FPA6	SST	48	0	100	1.7	5.7	5.9
44011	SST	682	0	100	1.1	-3.0	3.2

44034	SST	566	0	85	0.9	-3.7	3.8
45004	SST	230	0	53	1.4	-3.1	3.4
45141	SST	374	90	100	0.4	9.4	9.4
45144	SST	681	56	100	0.6	8.4	8.4
45158	SST	504	0	50	2.1	3.7	4.2

Figure 1. SHIP/SYNOP mean daily count. AUGUST 2004
All hours
Global average number of observations in 24 hours = 20457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120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
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0 2 3 1 0 0 0 0 0 0 0 0 2 0
4 1 10 6 3 6 0 9 6 1 5 3 0 6 6 5 3 32 14 10 4 5 1 8 5 4 8 8 8 7 4 0 0 0
9 27 19 19 16 20 31 12 22 18 18 4 21 11 12 36 32 34 141 142 93 72 51 49 49 15 27 14 12 22 33 18 12 8 15 8
13 26 46 15 49 53 40 38 27 1 12 18 45 19 7 11 29 603 1020 1020 309 138 113 113 109 140 139 73 88 97 87 51 38 29 17 9
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1 1 2 2 0 0 0 1 2 9 21 20 18 7 5 8 14 52 50 16 3 19 6 3 5 35 33 57 76 63 65 11 9 18 11 9
1 1 1 1 3 1 2 2 2 7 23 27 21 67 52 2 4 7 4 16 3 55 6 5 0 4 3 1 65 86 38 23 20 15 6 8
19 2 2 10 2 1 1 1 0 0 17 60 44 93 32 1 1 4 6 8 21 27 41 18 7 1 1 4 1 3 33 58 88 11 22 25
4 2 6 6 3 1 0 3 0 15 57 126 72 3 4 1 1 4 23 78 40 23 23 1 1 0 1 2 45 10 55 95 90 32 8
3 1 1 1 0 0 0 0 20 83 83 0 0 0 1 1 2 26 51 1 2 2 0 3 0 0 1 39 20 76 202 104 7 13
0 0 0 0 28 25 0 0 0 0 0 3 0 0 0 3 0 1 0 3 0 0 82 0 1 4
0 0 0 0 0 0 11 11 12 0 0 0 3 0 0
8 27 3 0 4 2 3 4 2 4
2 3 5 7 4 3
0 3

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoys.
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		: All hours
Elements monitored		:Mean sea level pressure (hPa). :Wind speed (m s^{-1}). :Wind direction (degrees). :Sea surface temperature (degrees).
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	: Percentage of observations flagged excluding those with gross errors
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. a positive bias indicates the wind observation is veered to the background.**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
	:25 m s^{-1}	(vector wind)
	:10 degrees	(sea surface temperature)

SELECTION CRITERIA :	NOBS	≥ 20 , and one or more of the following:	
	1.|bias|	≥ 4 hPa	(pressure),
		≥ 5 m s^{-1}	(wind speed),
		≥ 30 degrees	(direction).
		≥ 3 degrees	(sea surface temperature).
	2.SD	≥ 6 hPa	(pressure),
		≥ 80 degrees	(direction).
		≥ 5 degrees	(sea surface temperature).
	3.PGE	≥ 25.	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
11912	4.0	62.8	P	535	30	40	3.6	-0.8	3.7
16554	-54.1	-87.9	P	557	10	34	3.3	5.1	6.1
17564	-27.6	-6.8	P	21	29	29	0.5	-1.3	1.4
17664	-57.9	53.0	P	708	55	89	6.5	-3.9	7.6
25572	88.0	-110.0	P	236	10	100	3.7	4.3	5.7
33679	-56.8	-34.3	P	711	8	52	6.9	1.6	7.0
52654	24.6	130.3	P	427	29	32	2.0	0.2	2.0
61552	41.6	28.1	P	115	0	100	0.8	-5.0	5.0
73653	-60.3	-132.3	P	690	31	56	6.3	-2.4	6.8

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41590	28.1	-61.5	SPEED	343	0	100	6.2	6.8	9.2
52518	29.4	142.8	SPEED	21	0	100	1.3	-8.2	8.3
52530	22.7	126.2	SPEED	141	0	100	3.4	-5.8	6.7

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41542	26.0	-68.5	DIRN.	101	0	0	19.0	35.9	40.6
41544	23.0	-66.8	DIRN.	361	0	0	26.6	35.4	44.3
48613	75.4	-15.9	DIRN.	58	5	0	165.5	12.4	165.9
52523	35.8	155.9	DIRN.	151	0	0	101.8	47.1	112.2
52651	24.0	145.1	DIRN.	309	0	0	18.2	44.5	48.0

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
32693	15.5	-150.2	SST	721	0	100	0.1	3.2	3.2
43543	28.6	-112.2	SST	226	1	74	1.3	3.4	3.6
44502	51.4	-43.2	SST	24	17	100	0.6	8.7	8.7
46972	17.7	166.8	SST	183	0	100	0.2	5.0	5.0
64608	64.9	-37.1	SST	654	23	96	2.7	6.8	7.3
65564	84.4	-75.1	SST	689	0	67	1.2	3.0	3.2

Figure 2. DRIFTER mean daily count. AUGUST 2004
All hours
Global average number of observations in 24 hours = 11709

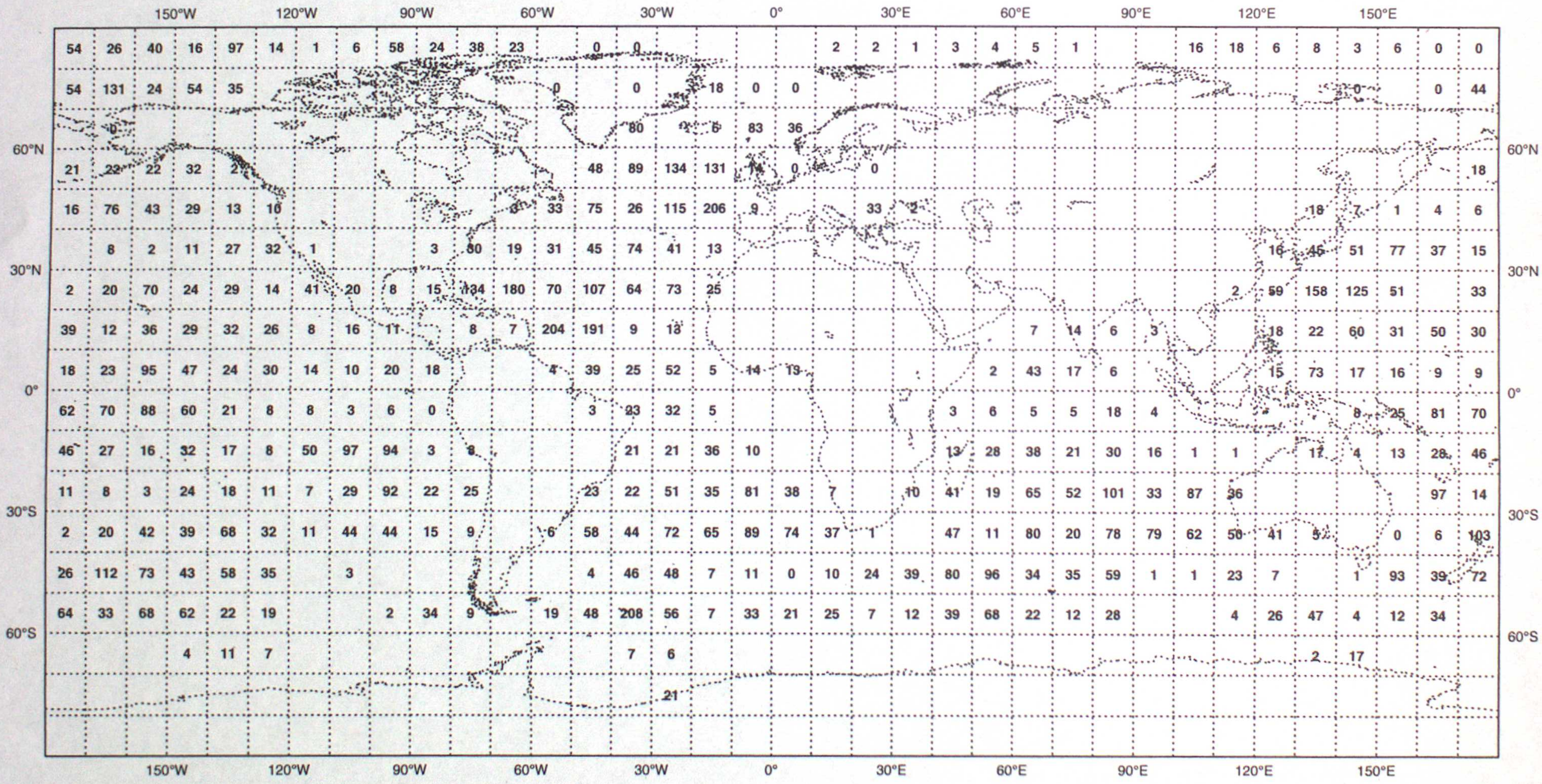

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
54 26 40 16 97 14 1 6 58 24 38 23 0 0 2 2 1 3 4 5 1 16 18 6 8 3 6 0 0
54 131 24 54 35 0 0 18 0 0 0 0 44
0 80 6 83 36
21 22 22 32 2 48 89 134 131 14 0 0 18
16 76 43 29 13 10 3 33 75 26 115 206 9 33 2 18 7 1 4 6
8 2 11 27 32 1 3 80 19 31 45 74 41 13 16 46 51 77 37 15
2 20 70 24 29 14 41 20 8 15 134 180 70 107 64 73 25 2 59 158 125 51 33
39 12 36 29 32 26 8 16 11 8 7 204 191 9 18 7 14 6 3 18 22 60 31 50 30
18 23 95 47 24 30 14 10 20 18 4 39 25 52 5 14 13 2 43 17 6 15 73 17 16 9 9
62 70 88 60 21 8 8 3 6 0 3 23 32 5 3 6 5 5 18 4 8 25 81 70
46 27 16 32 17 8 50 97 94 3 8 21 21 36 10 13 28 38 21 30 16 1 1 17 4 13 28 46
11 8 3 24 18 11 7 29 92 22 25 23 22 51 35 81 38 7 10 41 19 65 52 101 33 87 36 97 14
2 20 42 39 68 32 11 44 44 15 9 6 58 44 72 65 89 74 37 1 47 11 80 20 78 79 62 50 41 5 0 6 103
26 112 73 43 58 35 3 4 46 48 7 11 0 10 24 39 80 96 34 35 59 1 1 23 7 1 93 39 72
64 33 68 62 22 19 2 34 9 19 48 208 56 7 33 21 25 7 12 39 68 22 12 28 4 26 47 4 12 34
4 11 7 7 6 2 17
21

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.
GROSS ERROR LIMIT	:15 hPa	(pressure)
SELECTION CRITERIA	:NOBS	≥ 20 ,and one or more of the following:
	1.|bias|	≥ 4 hPa
	2. SD	≥ 6 hPa
	3.PGE	≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION AUG 200

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.4W	2	MS	56	0	0	2	1.6	-8.8	8.9
61492	16.1N	13.5W	18	MS	63	0	0	3	1.7	4.3	4.6
62056	32.8N	21.8E	625	S8	53	0	0	6	2.3	-5.2	5.7
63801	4.9S	29.6E	882	S8	83	1	1	1	1.1	7.4	7.5
63881	8.0S	31.6E	1923	S	46	0	0	0	0.6	13.2	13.2
65355	9.8N	1.1E	342	MS	102	3	3	0	0.8	-13.5	13.5
66285	11.8S	19.9E	1357	8	22	14	64	0	0.5	14.2	14.2
67229	14.7S	34.3E	1270	S	28	3	11	68	1.1	13.0	13.0
68014	19.6S	18.1E	1411	S8	67	0	0	0	0.6	-7.1	7.1
68030	18.5S	25.6E	1071	8	70	0	0	0	4.2	8.0	9.0
68038	20.5S	26.0E	903	8	65	2	3	0	1.0	4.2	4.3
68102	19.9S	16.4E	1343	MS	49	0	0	41	0.7	4.9	4.9
68300	26.6S	15.1E	16	MS	48	28	58	0	0.3	-14.5	14.5
68396	26.5S	31.3E	641	S8	46	0	0	0	1.0	4.8	4.9
68575	30.0S	30.0E	1175	S8	96	96	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
30554	54.5N	113.6E	995	MS	119	0	0	0	1.0	11.6	11.6
35416	49.1N	54.7E	128	S	120	0	0	0	0.7	4.1	4.2
36982	41.9N	78.2E	3635	S7	117	1	1	1	2.0	5.9	6.2
38565	40.6N	65.7E	485	MS	120	120	100	0			
38846	38.4N	70.0E	1437	S8	70	0	0	0	1.2	-6.1	6.2
40435	24.5N	44.4E	991	MS	59	1	2	0	0.7	7.8	7.8
40700	39.6N	47.9E	45	MS	112	0	0	0	0.8	-5.0	5.1
40713	37.4N	46.3E	1475	MS	112	1	1	0	0.5	12.8	12.8
40726	36.8N	45.7E	1384	MS	111	0	0	0	0.8	4.4	4.5
40741	36.5N	61.2E	235	MS	115	0	0	0	0.7	-4.8	4.9
40743	36.2N	57.7E	978	MS	116	0	0	0	0.9	5.0	5.1
40780	33.6N	46.4E	1362	MS	111	0	0	0	0.8	5.5	5.6
41254	23.1N	57.6E	1755	S8	120	120	100	0			
44416	28.6N	81.6E	720	MS	59	2	3	3	1.4	4.5	4.7
47022	40.8N	128.2E	1224	S	102	2	2	2	0.9	4.5	4.6
47678	33.1N	139.8E	79	MS	120	0	0	0	0.8	-8.5	8.5
48924	21.1N	101.5E	644	S	55	1	2	0	0.5	11.0	11.0
48925	20.7N	102.0E	550	S	54	0	0	0	0.7	-9.7	9.7
48938	19.2N	101.7E	326	MS	41	38	93	0	0.0	14.7	14.7
48957	14.8N	106.8E	105	MS	23	0	0	0	0.6	4.4	4.4
50727	47.2N	119.9E	1028	MS	120	0	0	0	0.6	4.4	4.4
50978	45.3N	130.9E	234	MS	120	0	0	0	0.7	-4.9	4.9
53646	38.3N	109.8E	1058	MS	120	0	0	0	0.7	-11.3	11.3
56462	29.0N	101.5E	2994	S	120	0	0	0	0.7	8.6	8.6
56768	25.0N	101.5E	1773	S	120	0	0	0	0.6	-5.2	5.2
57816	26.6N	106.7E	1074	MS	120	40	33	0	0.5	-14.4	14.4
59663	21.8N	112.0E	22	MS	120	0	0	0	0.8	-6.7	6.7

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80434	9.2N	66.0W	125	MS	45	2	4	2	2.7	-4.2	5.0
82181	2.0S	54.1W	146	MS	82	1	1	1	1.1	5.2	5.3
82586	5.2S	39.3W	212	MS	89	0	0	0	0.9	-4.6	4.7
82704	7.6S	72.7W	170	MS	65	1	2	2	0.9	-4.4	4.5
83235	12.4S	46.4W	604	MS	91	0	0	0	0.5	6.5	6.5
83332	14.1S	46.4W	826	MS	91	16	18	0	0.6	14.1	14.1

83470	17.9S	50.9W	727	MS	91	0	0	1	0.7	-5.7	5.7
83531	18.6S	46.5W	940	MS	89	0	0	0	0.7	-6.8	6.8
83836	25.5S	50.6W	837	MS	91	0	0	0	0.8	-4.8	4.9
84401	5.2S	80.6W	49	MS	64	1	2	0	0.8	4.6	4.7
84452	6.8S	79.8W	29	MS	65	0	0	0	1.0	4.0	4.1
84455	6.5S	76.4W	281	MS	52	1	2	2	1.7	8.0	8.2
84472	7.1S	78.5W	2620	S	29	0	0	0	0.9	-5.0	5.1
84501	8.1S	79.0W	26	MS	53	0	0	0	0.8	4.5	4.6
84686	13.6S	72.0W	3248	S	66	0	0	2	1.3	-4.2	4.4
84688	13.7S	73.4W	3444	S	27	0	0	0	0.6	-12.1	12.1
84782	18.1S	70.3W	468	MS	55	0	0	4	1.3	5.6	5.7
85140	14.3S	67.4W	140	MS	57	0	0	2	1.3	6.7	6.8
85264	18.5S	64.1W	1998	S	57	0	0	54	1.6	-5.6	5.8
85312	19.8S	63.9W	992	S	49	2	4	0	1.9	-11.7	11.9
85406	18.3S	70.3W	55	M	115	0	0	0	1.2	4.2	4.4

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71060	52.5N	116.1W	230	MS	110	110	100	0			
71181	47.1N	55.3W	29	MS	120	0	0	0	0.7	-5.7	5.7
72327	36.1N	86.7W	182	MS	116	0	0	0	0.6	4.2	4.2
76055	31.0N	114.9W	440	MS	54	53	98	0	0.0	-0.3	0.3
76225	28.6N	106.1W	1435	MS	72	1	1	1	0.8	-4.3	4.4
76543	22.0N	98.8W	104	MS	71	0	0	0	0.7	9.2	9.2
76658	19.2N	103.7W	494	MS	35	0	0	0	0.8	5.4	5.5
76687	19.5N	96.9W	1389	MS	85	0	0	0	0.5	4.3	4.3
76762	17.5N	99.5W	1265	MS	94	2	2	0	0.6	6.0	6.0
76773	17.8N	97.8W	1650	MS	25	0	0	0	0.7	5.8	5.8
76843	16.8N	93.1W	528	MS	103	0	0	1	1.3	-4.9	5.1
78588	17.2N	87.5W	-269	M	114	114	100	0			

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94130	14.8S	131.9E	120	MS	119	0	0	0	1.1	5.3	5.4
96505	3.7N	115.7E	-9999	8	25	24	96	0	0.0	1.1	1.1
97378	10.7S	123.1E	1	MS	45	43	96	0	0.0	-14.9	14.9
98851	6.1N	125.2E	14	MS	103	5	5	64	6.3	-8.8	10.8

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01360	61.9N	7.9E	711	MS	65	0	0	0	0.8	5.6	5.7
06239	54.9N	44.7E	49	MS	359	69	19	0	6.7	-3.8	7.7
06685	47.0N	9.1E	515	MS	119	0	0	1	1.0	6.0	6.1
06780	46.8N	9.8E	2690	S7	119	0	0	1	0.6	4.2	4.2
08912	42.9N	0.8W	1434	MS	111	111	100	0			
08922	42.8N	0.2W	1660	MS	110	110	100	0			
10850	48.8N	10.7E	457	MS	359	0	0	0	0.5	-5.4	5.4
13269	44.3N	19.9E	176	MS	114	1	1	1	0.5	7.4	7.4
14554	44.9N	18.4E	136	S	60	1	2	0	0.8	-13.0	13.0
16344	39.3N	16.4E	1710	S8	117	0	0	1	1.3	5.1	5.3
17203	38.9N	40.5E	1177	S8	97	0	0	1	1.3	4.1	4.3
17521	35.2N	33.5E	285	MS	90	90	100	0			

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	82	0	0	1	2.0	-7.0	7.3
89257	75.4S	59.9W	40	S	700	2	0	0	1.7	-7.8	8.0
89263	66.0S	66.1W	20	M	253	29	11	0	1.5	12.5	12.6

89266	72.2S	60.2W	91	S	258	258	100	0			
89272	75.0S	70.8W	1395	S	59	59	100	0			
89512	70.8S	11.8E	140	MS	118	0	0	2	1.9	-4.3	4.7
89610	65.9S	113.1E	90	S	250	1	0	0	1.4	-8.2	8.3
89614	66.6S	111.2E	500	S	267	267	100	0			
89744	74.0S	43.1E	3353	S	275	0	0	0	0.8	7.6	7.6
89811	66.7S	112.8E	1366	S	257	0	0	0	1.5	-4.0	4.3

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:300.0 - 150.0 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP ≥ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	4359	0	43	1.3	0.1	4328	0	42	0	5.2	0.3
AAL	7689	0	41	1.3	0.1	7411	0	42	0	5.1	0.1
AAR	1317	0	4	1.6	-0.6	1286	0	5	0	7.2	0.3
ACA	2615	1	9	1.6	0.0	2011	0	11	0	7.2	0.2
ACI	124	0	8	0.9	0.1	124	0	8	0	4.5	0.8
AEA	1659	1	2	1.4	0.0	1374	0	3	0	8.4	0.0
AEL	565	1	9	1.7	0.0	539	0	10	0	9.3	-0.4
AFL	833	0	4	2.1	0.2	443	0	4	0	7.8	0.5
AFR	1541	0	5	1.4	0.2	1495	0	7	0	8.6	-0.2
AJM	473	0	3	1.3	0.0	409	0	4	0	7.6	-0.1
AJX	324	0	2	1.4	0.6	325	0	3	0	7.3	0.2
AMD	105	0	57	1.5	0.9	105	0	57	0	4.7	0.4
AMT	2058	1	44	1.0	0.0	2051	0	44	0	5.4	0.1
AMX	488	1	4	1.5	0.3	421	1	7	0	10.7	-0.2
ANA	151	1	5	1.7	1.0	151	0	7	0	8.7	0.0
ANZ	5333	0	25	1.3	0.1	5328	0	25	0	6.1	0.3
ARG	30	7	47	3.5	0.5	24	0	46	0	7.8	0.8
ATN	183	1	100	3.9	-1.3	174	0	23	0	9.5	0.8
AUA	30	0	80	6.7	5.4	25	0	8	0	8.6	0.5
AVA	313	0	2	1.7	0.6	312	0	2	0	7.6	0.5
AVN	206	2	46	1.1	-0.2	206	0	46	0	7.5	-0.6
AXF	41	0	29	1.5	-0.5	41	0	29	0	7.9	-0.1
AZA	688	1	4	1.5	0.0	596	0	7	0	8.8	-0.1
BAL	440	1	10	1.6	-0.2	418	0	10	0	8.2	0.1
BAW	569	1	14	1.8	-0.6	378	0	16	0	6.8	0.3
BBR	279	1	2	1.4	0.4	279	0	100	0	13.2	3.5
BHP	66	0	3	1.5	-0.7	59	0	2	0	5.5	0.1
BPA	506	1	10	2.0	0.3	491	0	9	0	8.5	-0.6
BWA	411	1	2	1.4	0.0	364	0	6	0	8.8	0.0
CAL	35	3	9	2.1	0.4	39	0	10	0	7.7	0.8
CCA	439	1	17	2.6	0.4	426	0	63	0	11.5	-0.3
CES	487	2	9	1.9	0.0	487	1	10	0	9.4	0.6
CFC	41	2	17	2.9	0.5	42	0	5	0	5.3	-0.4
CFG	961	0	3	1.5	-0.1	793	0	4	0	7.4	-0.5
CKK	135	1	10	1.9	0.2	136	0	7	0	8.7	0.6
CKS	417	1	31	1.6	-0.5	376	1	34	0	7.0	0.8
CLX	421	0	6	1.6	-0.4	283	1	10	0	7.3	0.3
COA	280	0	31	1.5	0.2	214	0	29	0	9.1	-0.3
CPA	28	0	18	1.3	1.0	31	0	16	0	6.7	-0.1
CRL	1045	1	3	1.5	0.6	995	0	5	0	10.1	-0.4
CSN	110	4	12	1.6	0.2	110	1	15	0	10.6	1.0
CUB	352	1	5	1.7	0.2	331	0	5	0	8.8	0.2
DAL	3896	0	40	1.4	0.1	3550	0	43	0	6.1	-0.1
DCE	39	0	5	1.1	0.8	39	0	5	0	6.3	0.2
DHL	145	1	100	6.3	-5.9	85	0	45	0	17.8	5.1
DLH	1054	0	19	1.7	-0.1	975	0	21	0	6.9	0.5
DRD	264	2	6	2.0	0.1	262	0	10	0	10.2	-0.7
EDW	99	0	2	1.5	-0.1	86	0	5	0	8.2	-0.5
EEZ	143	1	8	1.5	0.1	142	0	13	0	9.8	-1.5
EIA	227	1	19	2.0	-0.2	227	0	100	0	16.6	3.7
ELY	195	0	3	1.4	0.3	151	0	3	0	8.2	-1.0
ETH	31	0	3	1.5	0.2	31	0	3	0	4.5	0.8
EVA	129	0	8	2.1	-0.2	140	0	5	0	8.9	-0.4
FCA	226	0	4	1.4	0.3	196	0	5	0	9.1	-0.2
FDX	1952	1	45	1.3	0.3	1787	0	45	0	6.2	0.1
FIN	424	1	4	1.8	0.2	317	0	3	0	5.8	0.6
FJI	951	2	32	1.5	0.6	940	0	31	0	7.8	0.7
FOM	868	1	25	1.5	-0.1	872	0	26	0	5.7	0.4
FWI	746	1	3	1.5	-0.2	745	0	6	0	8.5	-0.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
GCO	177	1	18	1.8	0.0	176	0	25	0	12.6	2.6
GHA	28	25	86	8.0	-5.2	25	0	12	0	11.1	0.3
GRL	127	1	6	2.5	1.1	114	0	1	0	5.1	0.5
GTI	191	0	10	1.5	0.0	180	0	16	0	8.4	0.5
HAL	5543	0	42	1.4	0.4	5462	0	42	0	5.5	0.2
HXL	354	1	5	1.6	0.0	316	0	4	0	6.9	0.6
IBE	3868	1	4	1.4	0.1	3820	0	6	0	8.9	-0.3
ICE	1359	1	5	1.6	-0.1	875	0	5	0	6.6	0.6
ISR	65	3	14	2.6	-0.7	40	0	3	0	5.9	1.9
IWD	663	0	1	1.3	0.1	658	0	5	0	9.5	0.0
JAL	2939	0	3	1.6	0.6	2886	0	4	0	7.7	0.3
JAZ	684	0	1	1.3	0.6	663	0	2	0	6.9	0.5
JBU	80	0	0	0.8	0.3	83	0	2	0	7.7	0.8
KAI	26	8	46	2.2	1.2	26	0	42	0	3.8	0.0
KAL	2217	0	6	1.6	0.0	2200	0	7	0	7.3	0.2
KIW	26	0	31	3.5	0.9	25	8	32	0	14.4	0.0
KLM	1569	0	4	1.7	0.0	1201	0	6	0	7.4	0.1
LAN	488	0	2	1.7	-0.1	488	0	2	0	5.8	0.7
LDI	530	1	4	1.6	0.4	440	0	3	0	7.8	0.0
LNE	116	1	7	1.9	0.4	115	0	5	0	7.3	0.0
LOT	134	1	6	2.4	-0.4	101	2	7	0	8.1	0.6
LTU	973	0	5	1.3	0.0	790	0	7	0	7.3	0.5
LXR	183	0	2	1.7	0.2	163	0	6	0	8.7	-0.3
MAS	232	0	3	1.4	0.0	229	0	3	0	5.7	0.2
MMZ	75	1	11	2.0	-1.0	76	0	11	0	6.4	-0.3
MON	104	2	8	1.9	0.3	75	0	4	0	6.4	0.7
MPD	769	0	2	1.4	0.4	732	0	5	0	9.8	-0.5
MPH	730	0	3	1.7	-0.8	532	0	1	0	6.0	0.0
MXA	97	4	9	2.5	1.4	95	0	57	0	10.7	-0.3
MYT	411	1	3	1.4	0.1	317	0	4	0	6.6	0.2
NAO	603	1	35	1.3	0.1	598	0	35	0	6.5	0.1
NCA	948	0	3	1.9	0.3	703	0	4	0	7.3	0.0
NWA	8538	0	13	1.6	0.2	8402	0	14	0	7.6	0.2
NZL	3441	0	8	1.3	0.0	3441	0	8	0	4.4	0.4
OAE	912	0	33	1.4	-0.1	803	0	43	0	10.2	1.6
OOM	174	0	5	2.3	-1.4	110	0	6	0	7.1	1.0
PAC	495	1	15	1.7	0.0	434	0	16	0	7.3	0.3
PAL	1512	0	7	1.5	0.1	1452	0	8	0	7.5	0.5
PAO	292	0	39	1.3	0.1	291	1	41	0	10.2	0.0
PBI	510	1	26	1.4	0.1	506	0	25	0	5.1	0.6
PLM	560	0	3	1.7	1.1	459	0	6	0	9.8	0.0
PUA	38	0	50	2.0	0.4	35	0	54	0	15.3	4.7
QFA	4405	0	42	1.3	0.2	4395	0	42	0	5.3	-0.2
QQA	30	0	47	0.9	-0.3	30	0	50	0	15.2	-0.4
RAM	432	0	5	2.0	0.6	328	0	51	0	11.6	-0.4
RCH	246	0	100	3.6	-0.5	202	0	100	0	16.0	-0.8
RRR	99	1	5	1.8	-0.5	90	0	10	0	9.3	1.2
RYN	43	0	42	1.2	-0.1	43	0	40	0	6.4	0.2
RZO	1405	1	4	1.5	-0.3	1317	0	5	0	8.8	-0.1
SAA	40	0	5	2.0	0.7	41	0	2	0	7.9	1.1
SCY	43	2	12	2.2	1.4	42	0	5	0	5.9	1.4
SEU	283	0	3	1.3	0.3	263	0	3	0	6.6	0.5
SIA	356	0	1	1.4	0.4	357	0	1	0	4.2	0.1
SLM	78	0	0	1.2	0.5	77	0	0	0	5.0	0.8
SQC	51	0	2	1.3	0.1	51	0	2	0	4.9	0.8
SSV	102	0	4	1.6	0.5	66	0	5	0	9.4	1.6
SVA	30	0	10	2.7	0.0	33	0	9	0	8.1	0.0
SVH	277	0	6	1.1	0.9	277	0	6	0	3.4	0.1
TAG	58	2	31	1.2	-0.4	54	0	37	0	5.0	0.2

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
TAM	54	0	52	3.2	-0.9	54	6	52	0	14.4	5.5
TAP	1018	1	4	1.5	-0.3	958	0	5	0	9.3	-0.1
TCV	27	4	7	1.5	0.9	27	0	7	0	8.9	1.2
TCX	81	1	5	1.9	0.0	50	0	0	0	5.2	1.0
THA	187	0	6	1.4	-0.1	193	1	8	0	6.7	0.5
THT	935	0	24	1.0	0.5	934	0	24	0	4.7	0.6
TPA	44	0	2	1.4	0.2	41	0	2	0	5.2	-0.6
TSC	490	1	3	1.6	-0.4	343	0	3	0	7.3	0.4
UAE	580	0	6	1.3	0.4	581	0	6	0	4.5	0.5
UAL	204143	0	94	0.9	-0.1	204336	0	94	0	4.7	0.2
UPS	1916	1	56	1.8	0.2	1897	0	56	0	6.9	0.2
USA	63	5	6	1.1	0.5	62	0	2	0	5.1	0.5
VHF	41	0	0	1.2	0.3	43	0	0	0	6.0	-0.6
VIR	268	1	4	1.7	0.1	172	0	5	0	7.0	1.0
VRG	101	2	46	2.7	0.1	103	0	100	0	12.7	2.2
VVJ	61	0	20	1.9	-0.5	63	0	21	0	6.5	1.5
VVR	55	4	36	2.0	1.3	53	0	36	0	7.1	1.1
WOA	407	0	7	1.6	0.2	365	0	8	0	6.9	0.3
XLA	189	0	1	1.3	0.4	181	0	2	0	7.2	0.0
YSS	192	1	4	1.7	0.8	192	0	6	0	8.8	0.1

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	35405	0	9	1.2	0.6	35405	0	9	0	5.4	0.4
EU	209776	0	26	1.3	0.4	209776	0	26	0	4.7	0.3
HK	3159	0	22	1.3	0.4	3159	0	22	0	5.4	0.3
JP	21060	0	54	1.7	1.1	21060	0	54	0	5.3	0.3
KL	1800	0	1	1.4	0.6	1800	0	1	0	7.5	0.0
MK	1987	0	6	1.7	1.4	1952	0	6	0	7.9	2.1
SA	3725	0	7	1.3	0.3	3725	0	7	0	6.9	0.2
TN	48	2	35	1.8	0.7	48	0	35	0	8.3	1.1

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	998	1	24	2.1	0.5	845	0	27	0	7.4	0.5
US ACARS	962780	0	62	1.3	0.4	962778	0	62	0	5.2	0.5

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :1000.0 – 300.1 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	144	1	33	1.4	0.0	134	0	35	0	5.9	2.2
AAR	22	5	18	1.4	-0.3	22	0	14	0	5.8	-1.2
ACA	43	0	26	0.9	0.1	35	0	23	0	4.0	0.3
AFR	70	1	4	1.5	0.3	71	1	4	0	7.3	1.8
AMD	229	0	66	1.2	0.4	229	0	66	0	4.1	0.5
AMT	31	0	29	1.6	0.5	31	0	26	0	7.3	-1.1
ANZ	223	0	19	1.5	-0.2	226	0	19	0	8.1	-0.8
AVN	24	0	42	1.6	-0.6	24	0	38	0	5.4	-0.1
AXF	49	0	61	1.5	-0.3	49	0	61	0	7.6	2.3
AZA	31	0	3	1.1	0.0	30	0	3	0	12.0	0.3
BAL	30	0	10	1.3	0.4	31	0	23	0	12.4	0.4
BPA	36	0	14	1.3	-0.2	33	0	15	0	6.6	-0.2
CFC	54	2	6	1.5	0.4	48	0	8	0	9.0	1.1
CFG	27	0	0	1.0	0.1	25	0	0	0	3.7	1.0
CKS	35	0	11	2.0	-0.2	23	0	17	0	10.7	0.6
CRL	26	4	8	1.9	0.0	29	0	3	0	12.9	0.6
CWC	28	4	4	1.5	0.7	21	0	0	0	5.0	0.7
DAL	111	0	51	1.4	0.2	106	0	52	0	3.8	-0.1
DLH	224	0	15	1.7	0.1	224	0	13	0	7.8	0.2
EIA	38	5	16	1.0	0.4	38	0	100	0	21.4	9.4
FDX	434	1	25	1.3	0.3	348	0	26	0	6.8	1.1
FJI	21	24	52	4.0	2.3	20	0	35	0	4.5	-1.0
FXI	59	0	20	3.6	1.9	55	0	9	0	11.0	3.7
GAF	63	0	2	1.5	0.2	24	0	0	0	4.0	1.8
GCO	102	0	13	1.6	0.1	84	0	33	0	15.2	1.7
HAL	103	2	45	2.0	0.4	103	0	44	0	6.4	0.3
ICE	65	0	17	1.2	-0.4	37	0	5	0	6.3	1.1
JAL	30	3	7	1.6	0.5	32	0	6	0	7.2	-0.1
KAL	61	2	5	1.3	-0.4	61	0	5	0	6.5	1.0
KIW	26	4	35	2.4	1.4	26	0	31	0	5.3	0.1
KLM	44	0	5	1.7	0.1	41	0	2	0	6.2	0.2
LAN	33	3	6	1.3	0.0	33	0	9	0	12.6	2.2
MAS	43	0	12	2.0	-0.5	43	0	9	0	4.9	0.5
MPH	98	0	3	1.8	-0.1	70	1	6	0	6.7	0.7
NCA	92	1	5	1.5	0.2	85	0	4	0	5.0	-1.1
NWA	480	1	7	1.4	0.2	472	0	7	0	6.8	-0.5
NZL	16635	0	53	1.0	0.2	16632	0	53	0	4.7	0.2
OAE	51	0	12	1.1	-0.2	38	0	39	0	18.4	4.0
OCE	25	0	0	1.7	0.8	23	0	0	0	5.0	1.3
PAC	44	0	18	2.4	-1.0	38	0	16	0	5.2	0.2
PAL	37	0	8	1.1	-0.2	35	0	9	0	6.2	2.1
QFA	289	0	46	1.4	0.0	290	0	46	0	4.9	0.8
RCH	30	0	100	3.6	-1.2	26	0	100	0	13.7	1.5
RRR	105	5	24	3.7	2.3	106	0	15	0	9.5	-1.7
RZO	37	3	3	1.3	-0.3	32	0	0	0	5.6	0.2
SIA	65	0	5	1.4	0.5	65	0	5	0	4.8	0.6
SVH	13161	0	59	1.4	0.5	13161	0	59	0	4.2	0.5
TAP	27	0	7	1.0	-0.4	27	0	7	0	5.2	-0.7
UAE	96	0	4	1.1	0.6	96	0	4	0	4.8	0.7
UAL	357461	0	99	1.0	-0.1	357077	0	99	0	3.9	0.4
UPS	227	0	55	1.7	0.0	223	0	55	0	6.2	-0.2
VVP	54	2	26	2.4	-0.1	51	0	22	0	9.7	3.6
WOA	157	2	5	1.4	0.1	111	0	14	0	11.6	2.7

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	28759	0	48	1.2	0.5	28760	0	48	0	4.4	0.3
EU	621545	0	67	1.0	0.2	616944	0	67	0	3.7	0.0

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
HK	3733	0	74	1.1	-0.1	3733	0	74	0	4.0	0.3
JP	42575	0	55	1.2	0.3	42575	0	55	0	4.2	0.5
KL	572	0	57	1.5	-0.2	572	0	57	0	5.0	-0.6
MK	2445	0	48	1.2	0.4	2399	0	48	0	4.4	0.8
SA	3523	0	54	1.5	0.4	3523	0	54	0	4.6	-0.2

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
US ACARS	1661479	0	77	1.1	0.2	1656981	0	77	0	3.9	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 49853

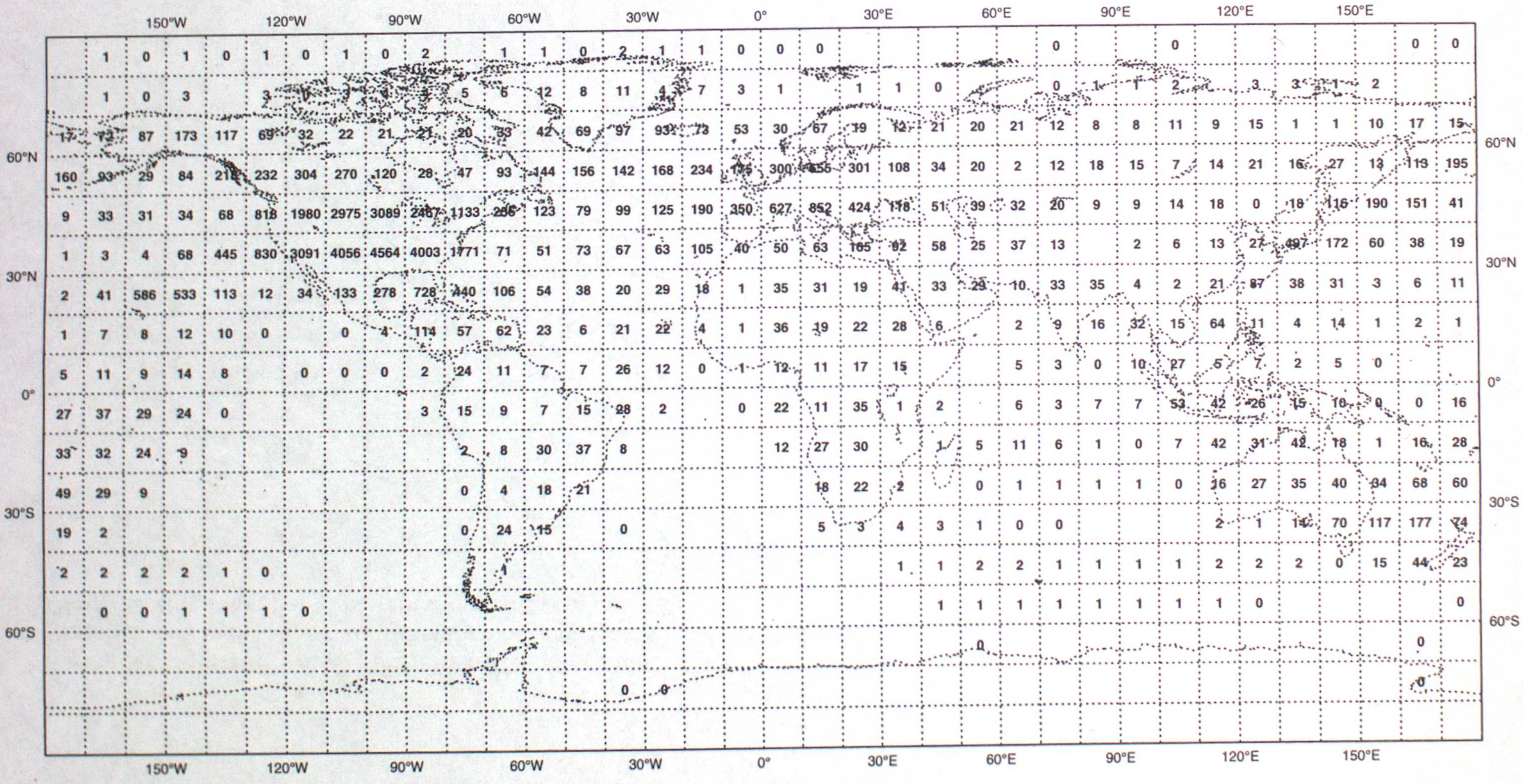

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
1 0 1 0 1 0 1 0 2 1 1 0 2 1 1 0 0 0 0 0 0 0
1 0 3 3 0 3 4 3 5 6 12 8 11 4 7 3 1 1 1 0 0 1 1 2 3 3 1 2
17 72 87 173 117 69 32 22 21 21 20 33 42 69 97 93 73 53 30 67 19 12 21 20 21 12 8 8 11 9 15 1 1 10 17 15
160 93 29 84 218 232 304 270 120 28 47 93 144 156 142 168 234 175 300 655 301 108 34 20 2 12 18 15 7 14 21 16 27 13 113 195
9 33 31 34 68 818 1980 2975 3089 2487 1133 256 123 79 99 125 190 350 627 852 424 118 51 39 32 20 9 9 14 18 0 18 116 190 151 41
1 3 4 68 445 830 3091 4056 4564 4003 1771 71 51 73 67 63 105 40 50 63 165 82 58 25 37 13 2 6 13 27 497 172 60 38 19
2 41 586 533 113 12 34 133 278 728 440 106 54 38 20 29 18 1 35 31 19 41 33 29 10 33 35 4 2 21 87 38 31 3 6 11
1 7 8 12 10 0 0 4 114 57 62 23 6 21 22 4 1 36 19 22 28 6 2 9 16 32 15 64 11 4 14 1 2 1
5 11 9 14 8 0 0 0 2 24 11 7 7 26 12 0 1 12 11 17 15 5 3 0 10 27 5 7 2 5 0
27 37 29 24 0 3 15 9 7 15 28 2 0 22 11 35 1 2 6 3 7 7 53 42 26 15 10 0 0 16
33 32 24 9 2 8 30 37 8 12 27 30 1 5 11 6 1 0 7 42 31 42 18 1 16 28
49 29 9 0 4 18 21 18 22 2 0 1 1 1 1 0 16 27 35 40 34 68 60
19 2 0 24 15 0 5 3 4 3 1 0 0 2 1 14 70 117 177 74
2 2 2 2 1 0 1 1 1 2 2 1 1 1 1 2 2 2 0 15 44 23
0 0 1 1 1 0 1 1 1 1 1 1 1 1 0 0
0 0
0 0 0
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 88598

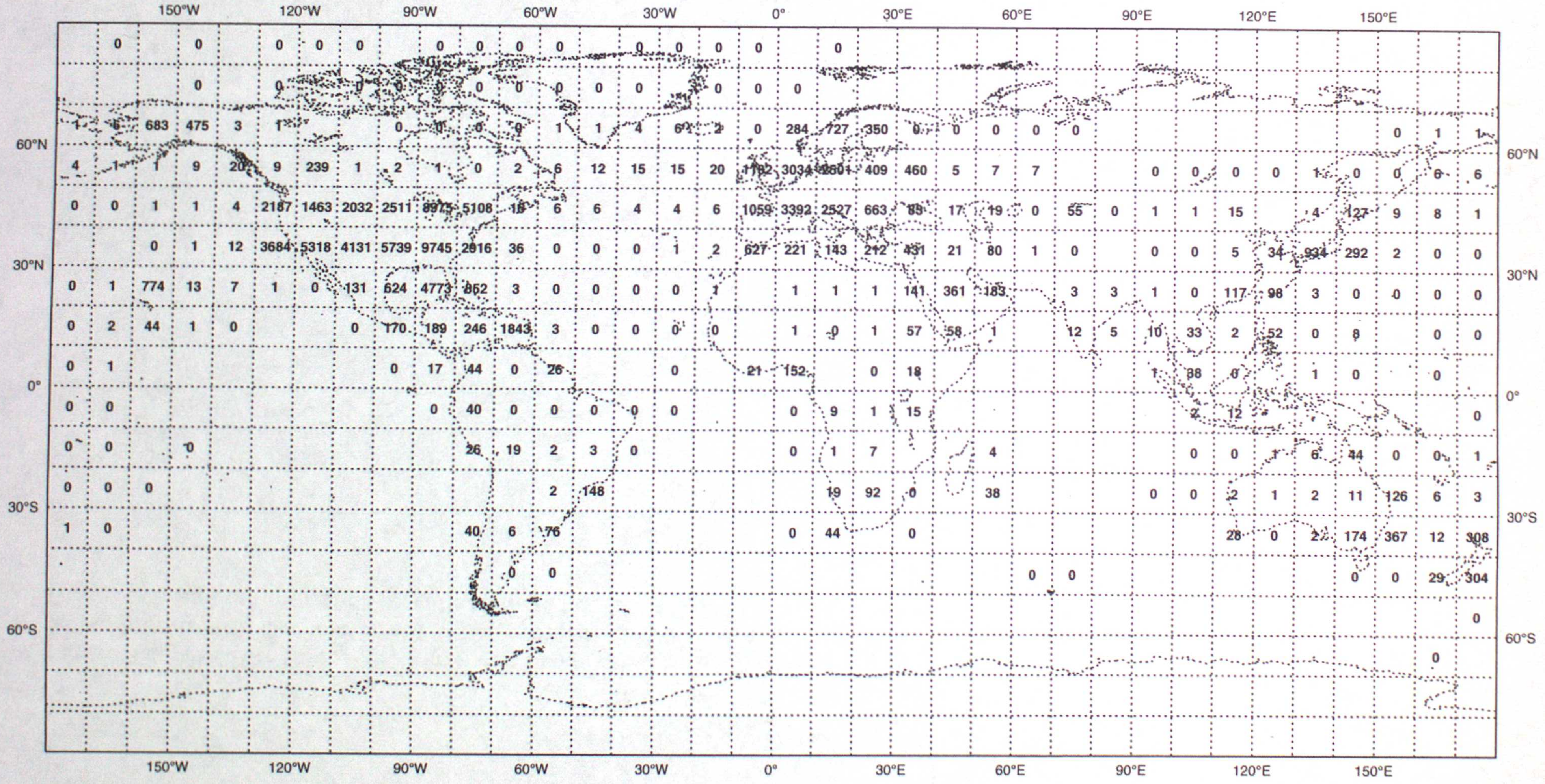

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1 6 683 475 3 1 0 0 0 0 1 1 4 6 2 0 284 727 350 0 0 0 0 0 0 1 1
4 1 1 9 20 9 239 1 2 1 0 2 6 12 15 15 20 1182 3034 3601 409 460 5 7 7 0 0 0 0 1 0 0 6 6
0 0 1 1 4 2187 1463 2032 2511 8975 5108 18 6 6 4 4 6 1059 3392 2527 663 85 17 19 0 55 0 1 1 15 4 127 9 8 1
0 1 12 3684 5318 4131 5739 9745 2816 36 0 0 0 1 2 627 221 143 212 431 21 80 1 0 0 0 5 34 934 292 2 0 0
0 1 774 13 7 1 0 131 624 4773 852 3 0 0 0 0 1 1 1 1 141 361 183 3 3 1 0 117 98 3 0 0 0 0
0 2 44 1 0 0 170 189 246 1843 3 0 0 0 0 1 0 1 57 58 1 12 5 10 33 2 52 0 8 0 0
0 1 0 17 44 0 26 0 21 152 0 18 1 88 0 1 0 0
0 0 0 40 0 0 0 0 0 0 9 1 15 2 12 0
0 0 0 26 19 2 3 0 0 1 7 4 0 0 1 6 44 0 0 1
0 0 0 2 148 19 92 0 38 0 0 2 1 2 11 126 6 3
1 0 40 6 76 0 44 0 28 0 2 174 367 12 308
0 0 0 0 0 0 29 304
0
0

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

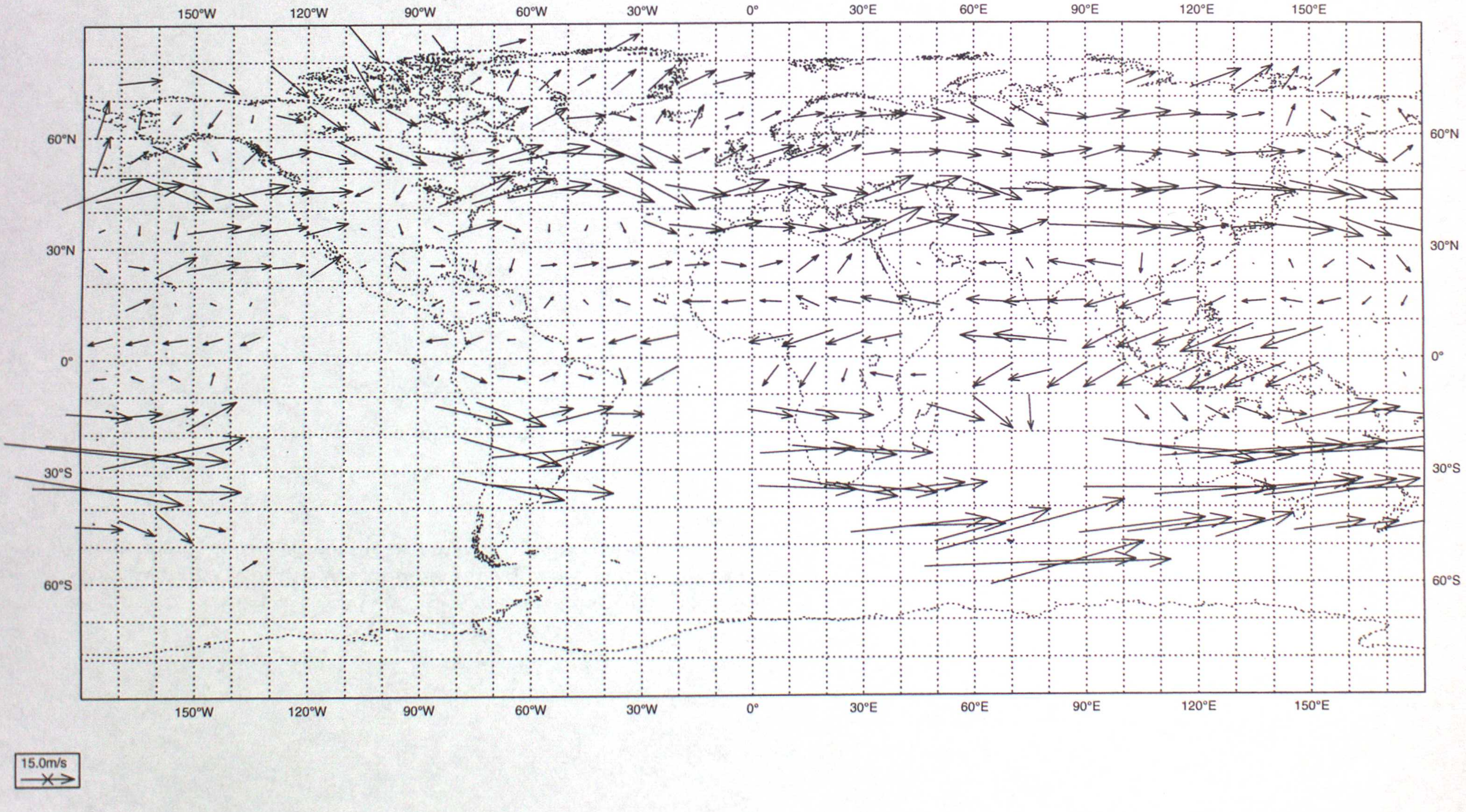

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

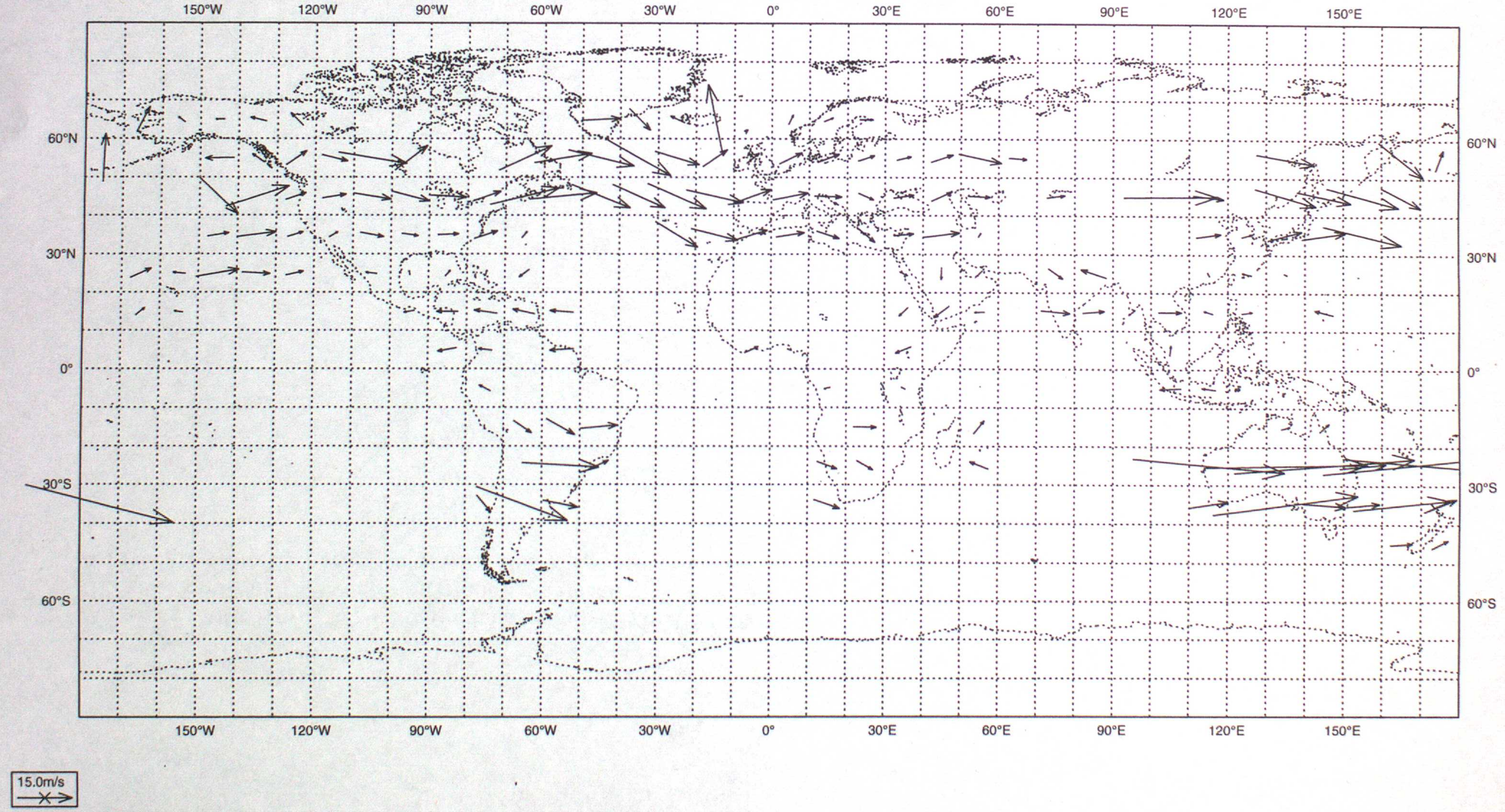

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

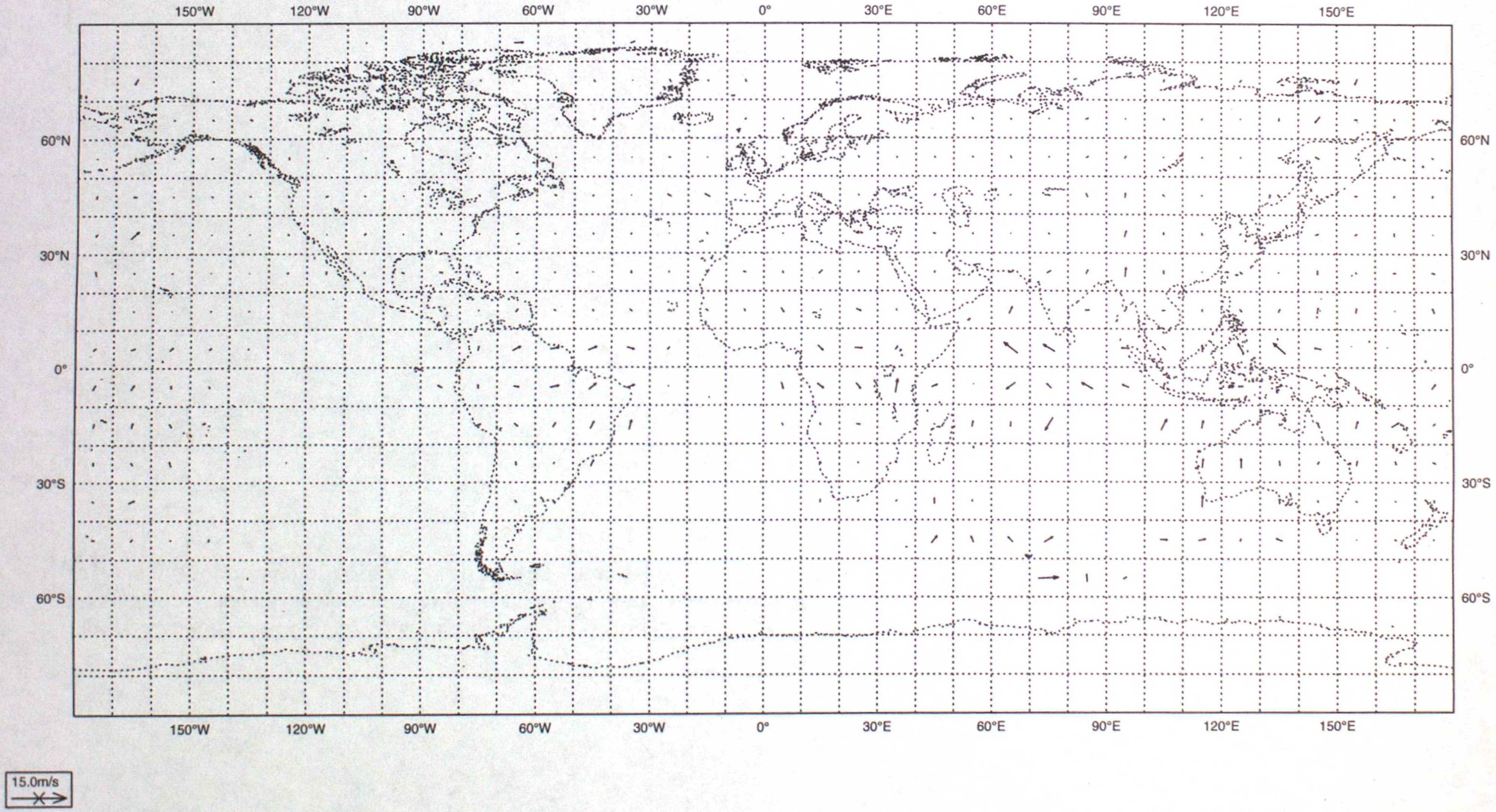

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

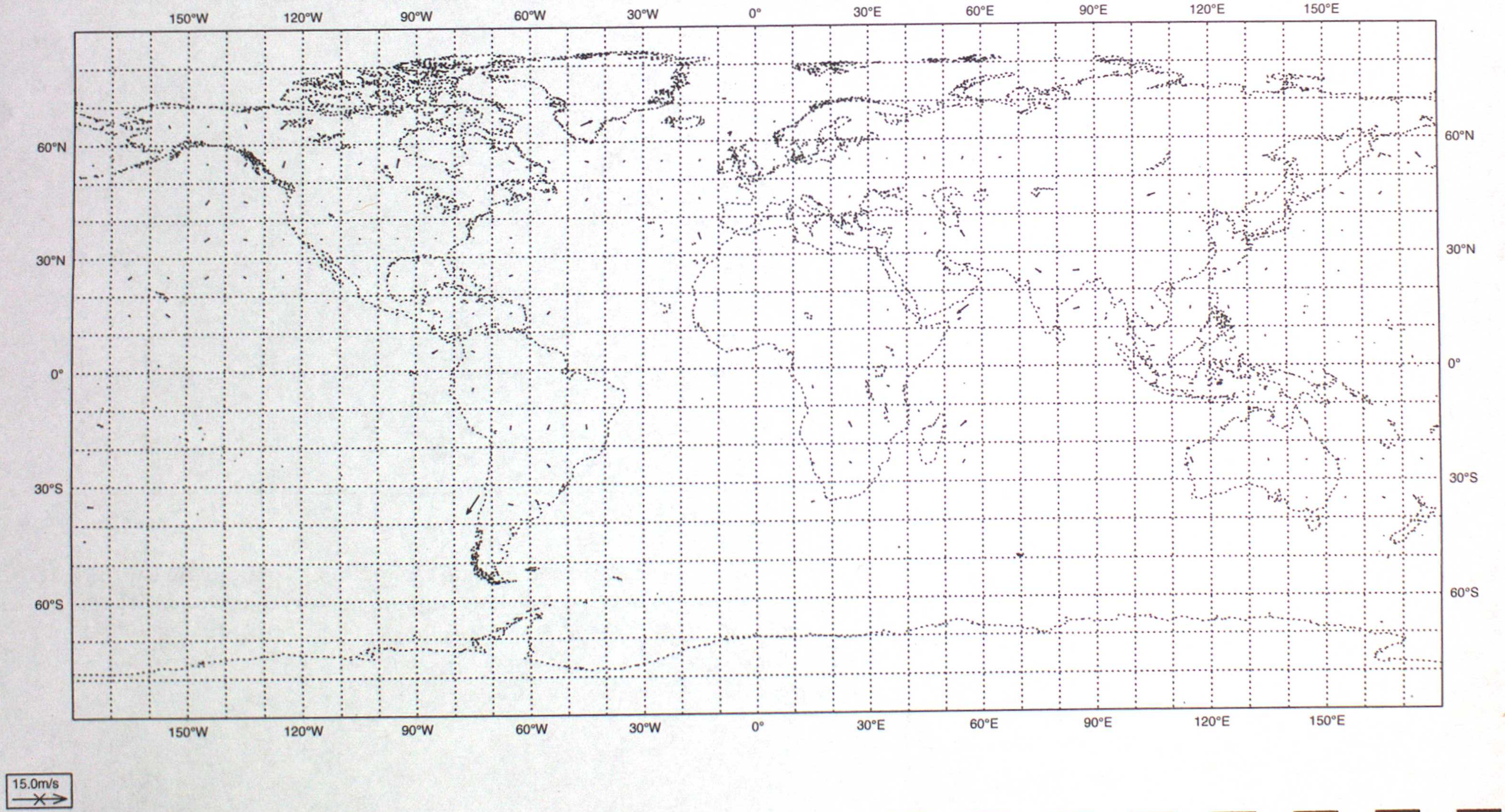

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

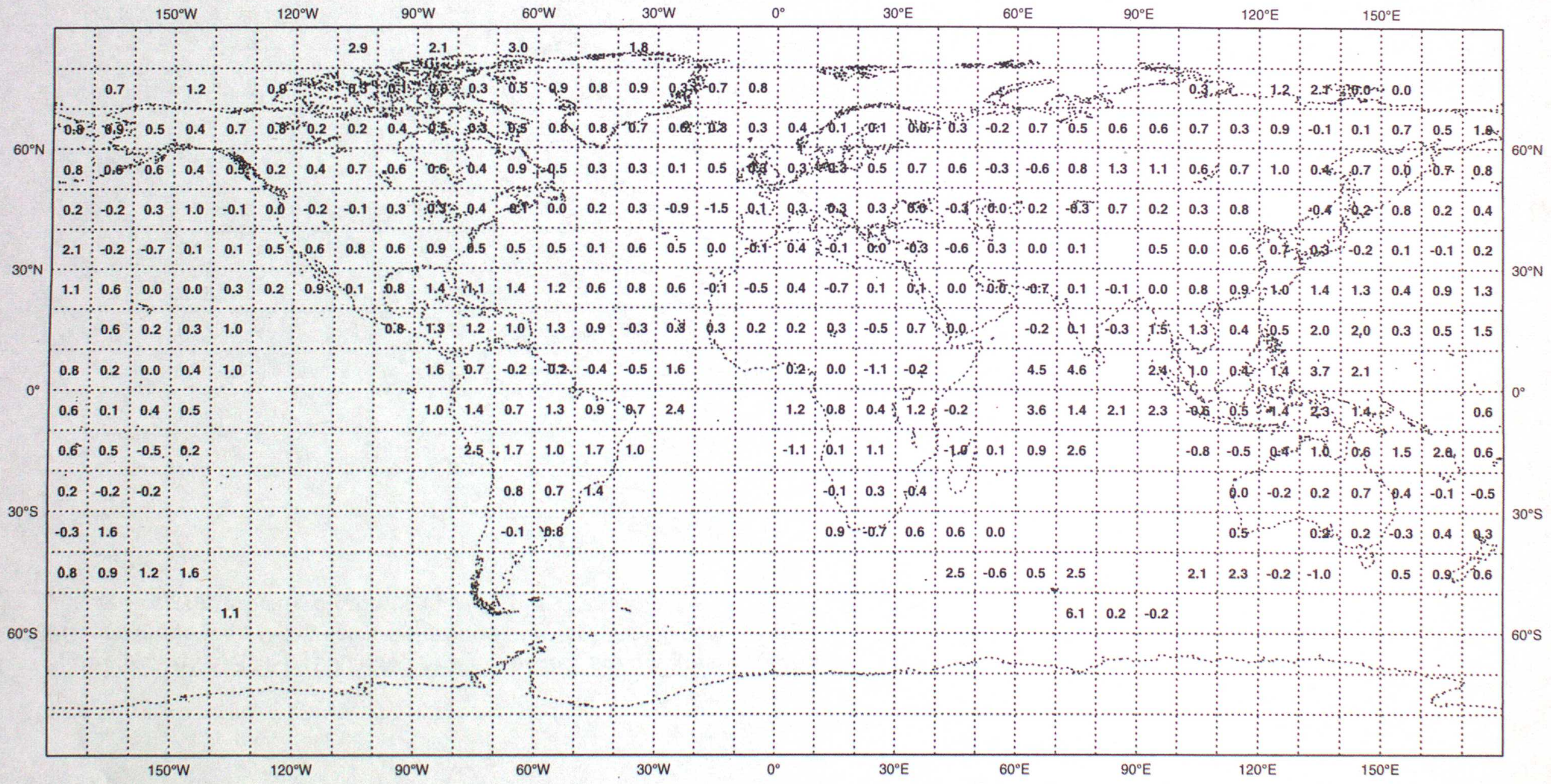

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2.9 2.1 3.0 1.8
0.7 1.2 0.9 0.3 0.1 0.0 0.3 0.5 0.9 0.8 0.9 0.3 -0.7 0.8 0.3 1.2 2.1 0.0 0.0
0.9 0.9 0.5 0.4 0.7 0.8 0.2 0.2 0.4 0.5 0.3 0.5 0.8 0.8 0.7 0.6 0.3 0.3 0.4 0.1 0.1 0.0 0.3 -0.2 0.7 0.5 0.6 0.6 0.7 0.3 0.9 -0.1 0.1 0.7 0.5 1.8
0.8 0.6 0.6 0.4 0.5 0.2 0.4 0.7 0.6 0.6 0.4 0.9 0.5 0.3 0.3 0.1 0.5 0.3 0.3 0.3 0.5 0.7 0.6 -0.3 -0.6 0.8 1.3 1.1 0.6 0.7 1.0 0.4 0.7 0.0 0.7 0.8
0.2 -0.2 0.3 1.0 -0.1 0.0 -0.2 -0.1 0.3 0.3 0.4 0.1 0.0 0.2 0.3 -0.9 -1.5 0.1 0.3 0.3 0.3 0.0 -0.3 0.0 0.2 -0.3 0.7 0.2 0.3 0.8 -0.4 0.2 0.8 0.2 0.4
2.1 -0.2 -0.7 0.1 0.1 0.5 0.6 0.8 0.6 0.9 0.5 0.5 0.5 0.1 0.6 0.5 0.0 -0.1 0.4 -0.1 0.0 -0.3 -0.6 0.3 0.0 0.1 0.5 0.0 0.6 0.7 0.3 -0.2 0.1 -0.1 0.2
1.1 0.6 0.0 0.0 0.3 0.2 0.9 0.1 0.8 1.4 1.1 1.4 1.2 0.6 0.8 0.6 -0.1 -0.5 0.4 -0.7 0.1 0.1 0.0 0.0 -0.7 0.1 -0.1 0.0 0.8 0.9 1.0 1.4 1.3 0.4 0.9 1.3
0.6 0.2 0.3 1.0 0.8 1.3 1.2 1.0 1.3 0.9 -0.3 0.3 0.3 0.2 0.2 0.3 -0.5 0.7 0.0 -0.2 0.1 -0.3 1.5 1.3 0.4 0.5 2.0 2.0 0.3 0.5 1.5
0.8 0.2 0.0 0.4 1.0 1.6 0.7 -0.2 -0.2 -0.4 -0.5 1.6 0.2 0.0 -1.1 -0.2 4.5 4.6 2.4 1.0 0.4 1.4 3.7 2.1
0.6 0.1 0.4 0.5 1.0 1.4 0.7 1.3 0.9 0.7 2.4 1.2 0.8 0.4 1.2 -0.2 3.6 1.4 2.1 2.3 -0.6 0.5 -1.4 2.3 1.4 0.6
0.6 0.5 -0.5 0.2 2.5 1.7 1.0 1.7 1.0 -1.1 0.1 1.1 -1.0 0.1 0.9 2.6 -0.8 -0.5 0.4 1.0 0.6 1.5 2.6 0.6
0.2 -0.2 -0.2 0.8 0.7 1.4 -0.1 0.3 -0.4 0.0 -0.2 0.2 0.7 0.4 -0.1 -0.5
-0.3 1.6 -0.1 0.8 0.9 -0.7 0.6 0.6 0.0 0.5 0.2 0.2 -0.3 0.4 0.3
0.8 0.9 1.2 1.6 2.5 -0.6 0.5 2.5 2.1 2.3 -0.2 -1.0 0.5 0.9 0.6
1.1 6.1 0.2 -0.2

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

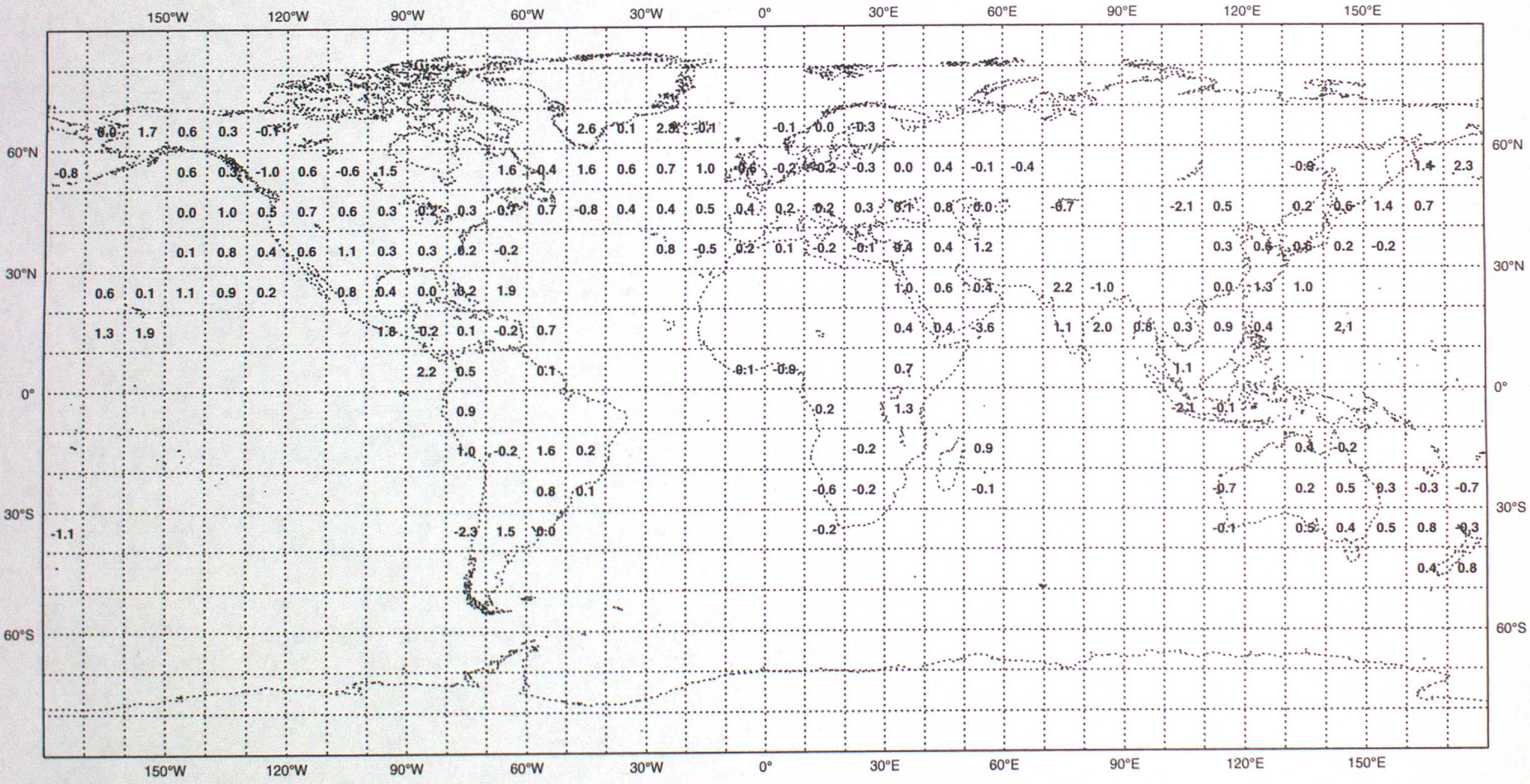

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0.0 1.7 0.6 0.3 -0.1 2.6 0.1 2.8 0.1 -0.1 0.0 -0.3
-0.8 0.6 0.3 -1.0 0.6 -0.6 1.5 1.6 0.4 1.6 0.6 0.7 1.0 0.6 -0.2 0.2 -0.3 0.0 0.4 -0.1 -0.4 -0.9 1.4 2.3
0.0 1.0 0.5 0.7 0.6 0.3 0.2 0.3 0.7 0.7 -0.8 0.4 0.4 0.5 0.4 0.2 0.2 0.3 0.1 0.8 0.0 -0.7 -2.1 0.5 0.2 0.6 1.4 0.7
0.1 0.8 0.4 0.6 1.1 0.3 0.3 0.2 -0.2 0.8 -0.5 0.2 0.1 -0.2 -0.1 0.4 0.4 1.2 0.3 0.6 0.6 0.2 -0.2
0.6 0.1 1.1 0.9 0.2 -0.8 0.4 0.0 0.2 1.9 1.0 0.6 0.4 2.2 -1.0 0.0 1.3 1.0
1.3 1.9 1.8 -0.2 0.1 -0.2 0.7 0.4 0.4 -3.6 1.1 2.0 0.8 0.3 0.9 0.4 2.1
2.2 0.5 0.1 -0.1 -0.9 0.7 1.1
0.9 0.2 1.3 -2.1 -0.1
1.0 -0.2 1.6 0.2 -0.2 0.9 0.4 -0.2
0.8 0.1 -0.6 -0.2 -0.1 -0.7 0.2 0.5 0.3 -0.3 -0.7
-1.1 -2.3 1.5 0.0 -0.2 -0.1 0.5 0.4 0.5 0.8 0.3
0.4 0.8

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

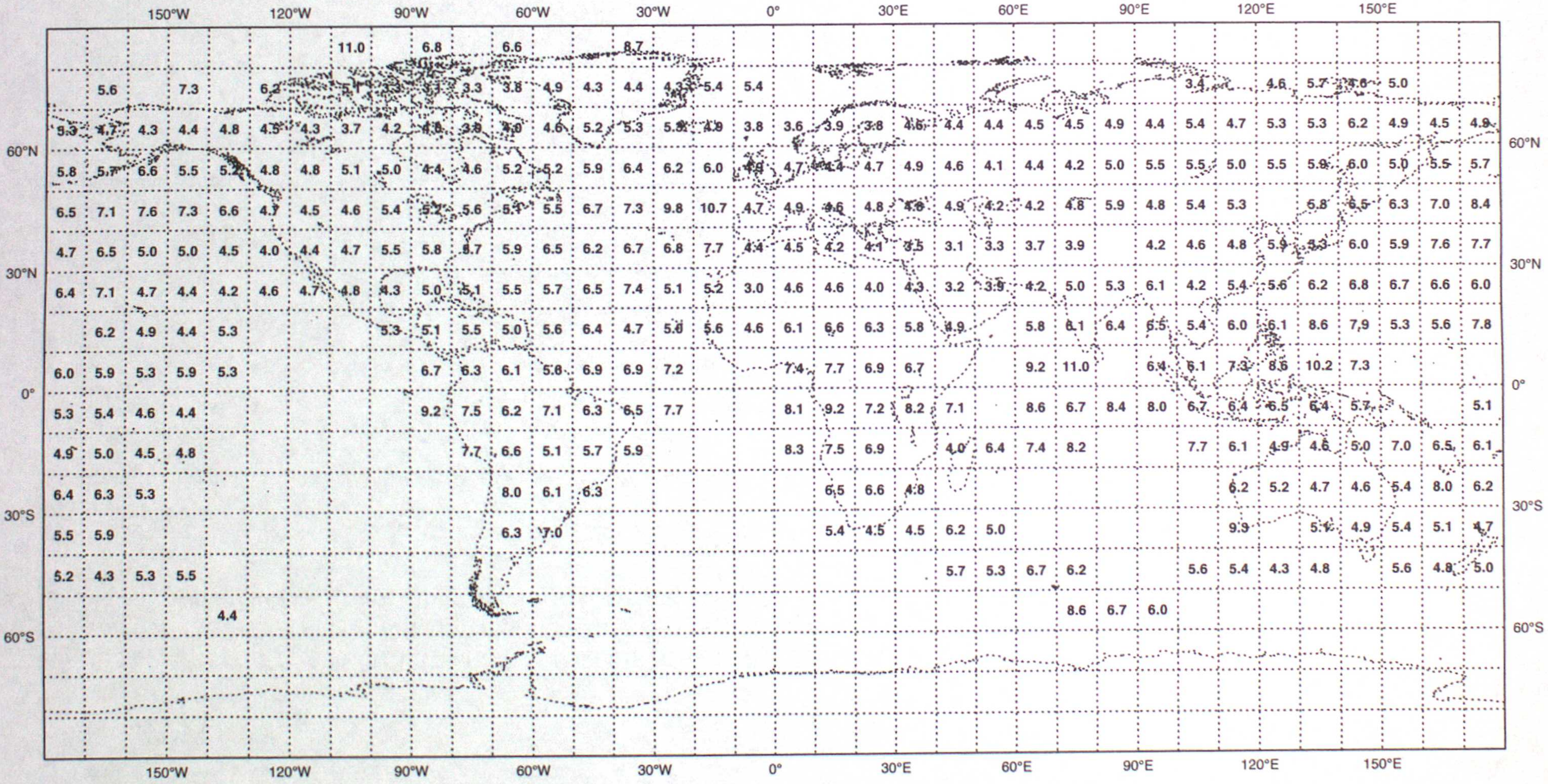

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). AUGUST 2004
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

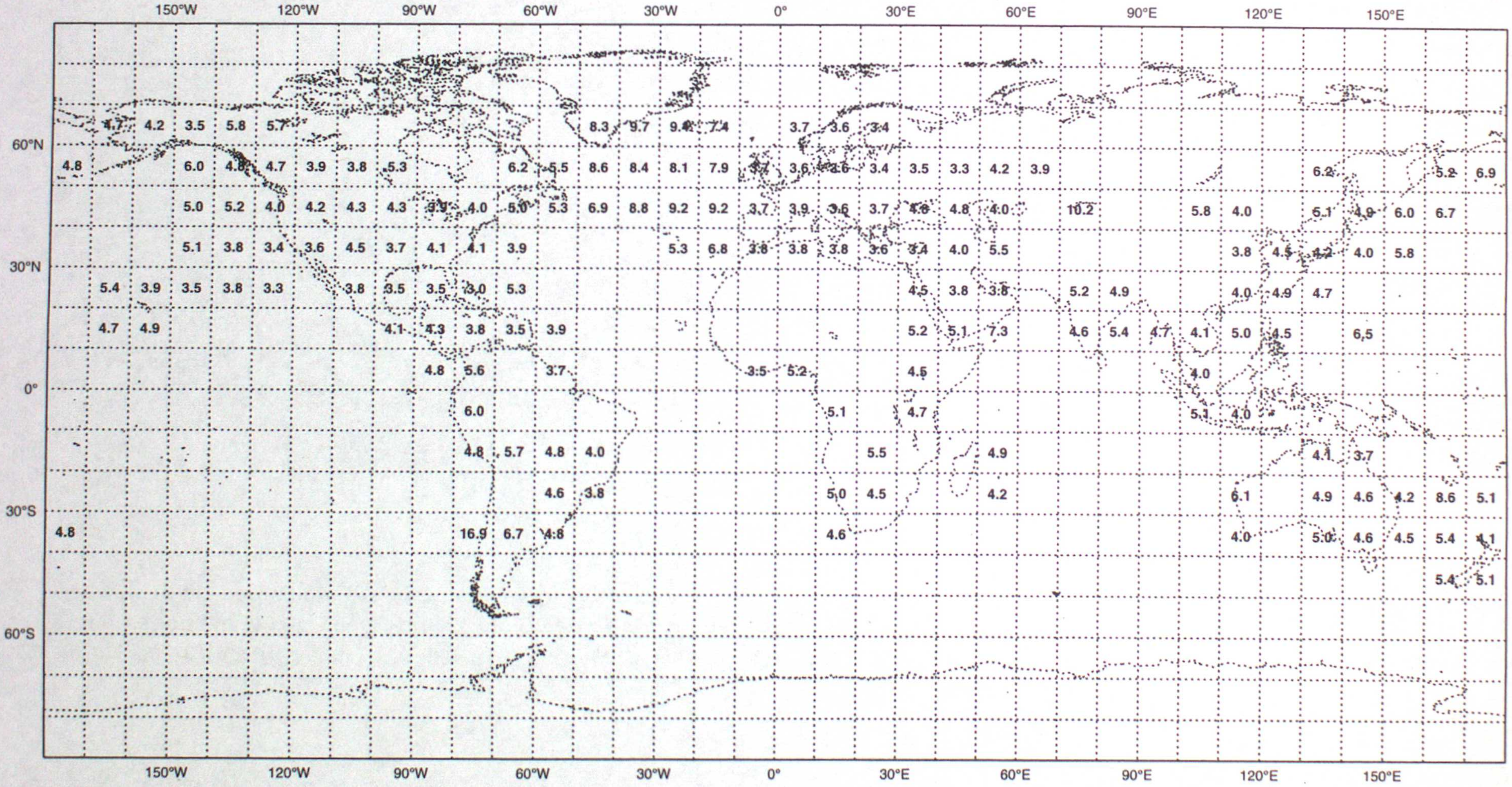

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4.7 4.2 3.5 5.8 5.7 8.3 9.7 9.4 7.4 3.7 3.6 3.4
4.8 6.0 4.8 4.7 3.9 3.8 5.3 6.2 5.5 8.6 8.4 8.1 7.9 3.7 3.6 3.6 3.4 3.5 3.3 4.2 3.9 6.2 5.2 6.9
5.0 5.2 4.0 4.2 4.3 4.3 3.9 4.0 5.0 5.3 6.9 8.8 9.2 9.2 3.7 3.9 3.6 3.7 4.8 4.8 4.0 10.2 5.8 4.0 5.1 4.9 6.0 6.7
5.1 3.8 3.4 3.6 4.5 3.7 4.1 4.1 3.9 5.3 6.8 3.8 3.8 3.8 3.6 3.4 4.0 5.5 3.8 4.5 4.2 4.0 5.8
5.4 3.9 3.5 3.8 3.3 3.8 3.5 3.5 3.0 5.3 4.5 3.8 3.8 5.2 4.9 4.0 4.9 4.7
4.7 4.9 4.1 4.3 3.8 3.5 3.9 5.2 5.1 7.3 4.6 5.4 4.7 4.1 5.0 4.5 6.5
4.8 5.6 3.7 3.5 5.2 4.5 4.0
6.0 5.1 4.7 5.1 4.0
4.8 5.7 4.8 4.0 5.5 4.9 4.1 3.7
4.6 3.8 5.0 4.5 4.2 6.1 4.9 4.6 4.2 8.6 5.1
4.8 16.9 6.7 4.8 4.6 4.0 5.0 4.6 4.5 5.4 4.1
5.4 5.1

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 30.0 hPa
Element monitored		:GEOPOTENTIAL HEIGHT IN metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.1	
SELECTION CRITERIA	: ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.	

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
23804	00	Z	50	62/ 51	30	0	244.0	45.0	248.1	9
23804	12	Z	50	62/ 51	29	1	219.9	58.7	227.6	9
27199	12	Z	1000	59/ 50	26	5	31.6	-31.1	44.3	5
27730	00	Z	70	55/ 40	25	0	121.4	80.8	145.8	8
27730	12	Z	70	55/ 40	24	0	131.9	146.7	197.3	9
30054	12	Z	400	59/ 113	24	2	59.9	-74.1	95.3	6
42101	00	Z	100	30/ 76	11	1	124.9	-87.8	152.7	5
42101	12	Z	100	30/ 76	10	0	122.6	-4.5	122.7	4
42182	00	Z	150	29/ 77	24	1	108.5	-135.5	173.6	10
42182	12	Z	70	29/ 77	14	1	158.8	100.3	187.8	10
42314	00	Z	100	27/ 95	12	1	125.6	-124.3	176.7	5
42339	00	Z	200	26/ 73	12	3	40.6	-170.4	175.2	8
42339	12	Z	300	26/ 73	10	0	65.0	-70.7	96.1	4
42361	00	Z	150	26/ 78	11	1	68.7	-100.0	121.3	5
42361	12	Z	200	26/ 78	12	1	77.3	-91.8	120.0	4
42369	00	Z	150	27/ 81	11	0	83.1	-184.5	202.4	8
42369	12	Z	150	27/ 81	11	2	102.6	-163.1	192.7	10
42379	12	Z	1000	27/ 83	17	0	13.0	-41.4	43.4	4
42397	00	Z	150	27/ 88	11	1	61.6	-134.5	148.0	5
42410	00	Z	150	26/ 92	16	0	80.1	-96.5	125.4	4
42492	00	Z	1000	26/ 85	26	3	13.7	-82.3	83.4	4
42492	12	Z	1000	26/ 85	17	13	12.4	-83.8	84.7	5
42647	00	Z	1000	23/ 73	24	0	23.6	-45.3	51.0	6
42667	00	Z	200	23/ 77	12	0	59.4	-87.3	105.6	4
42701	00	Z	50	23/ 85	10	0	180.2	-7.0	180.3	7
42701	12	Z	150	23/ 85	19	1	81.8	-134.8	157.7	8
42809	00	Z	100	23/ 88	13	1	98.4	-118.8	154.2	9
42809	12	Z	100	23/ 88	15	1	66.2	-208.5	218.7	10
42867	00	Z	150	21/ 79	17	3	93.4	-173.6	197.1	8
42867	12	Z	150	21/ 79	21	1	76.6	-159.8	177.2	10
42874	00	Z	150	21/ 82	13	1	74.8	-137.7	156.7	8
42874	12	Z	200	21/ 82	18	0	63.2	-105.7	123.2	7
42971	00	Z	1000	20/ 86	24	4	16.9	-64.3	66.5	7
42971	12	Z	1000	20/ 86	26	5	13.1	-72.6	73.7	8
43003	00	Z	1000	19/ 73	16	13	7.5	-88.3	88.6	10
43003	12	Z	1000	19/ 73	15	14	6.8	-87.0	87.3	11
43014	00	Z	150	20/ 75	13	1	155.2	-30.8	158.2	6
43014	12	Z	150	20/ 75	11	0	121.3	-72.4	141.2	6
43128	00	Z	850	17/ 78	28	1	28.7	34.5	44.9	8
43128	12	Z	850	17/ 78	27	0	33.0	25.5	41.7	4
43150	00	Z	150	18/ 83	12	0	71.4	-154.2	170.0	7
43150	12	Z	150	18/ 83	15	0	44.7	-133.1	140.4	7
43185	00	Z	1000	16/ 81	19	1	36.3	24.9	44.0	8
43185	12	Z	1000	16/ 81	26	0	30.8	12.8	33.3	7
43192	00	Z	150	15/ 74	8	2	56.4	-150.0	160.2	7
43192	12	Z	300	15/ 74	16	0	69.1	-24.6	73.4	5
43285	00	Z	100	13/ 75	10	0	93.7	-149.7	176.6	8
43295	00	Z	850	13/ 78	24	2	29.0	44.3	53.0	5
43295	12	Z	850	13/ 78	25	0	25.5	31.6	40.6	6
43311	12	Z	150	11/ 73	9	2	103.6	101.2	144.8	6
43333	00	Z	70	12/ 93	12	0	145.8	71.3	162.3	6
43333	12	Z	70	12/ 93	10	1	201.1	35.0	204.1	6
43346	00	Z	200	11/ 80	15	0	98.6	-24.9	101.7	5
43346	12	Z	150	11/ 80	14	0	121.5	-31.3	125.5	7
43369	00	Z	200	8/ 73	16	1	74.6	-42.4	85.8	5
43371	00	Z	150	8/ 77	21	1	117.2	-110.9	161.3	8
47058	00	Z	1000	39/ 126	21	7	16.5	-76.9	78.6	4
58968	00	Z	70	25/ 122	26	1	83.4	139.4	162.5	4
84378	12	Z	1000	-4/ -73	10	0	6.1	46.5	46.9	5
84416	12	Z	850	-5/ -81	10	0	25.4	64.7	69.5	7

```
97014  00   Z   400      2/ 125   11     0    65.4  -18.5   67.9    5
97180  00   Z   200     -5/ 120   11     1   119.7 -107.6  161.0   10
```

Figure 8. TEMP 500 hPa geopotential mean daily count. AUGUST 2004
All hours
Global average number of observations in 24 hours = 1183

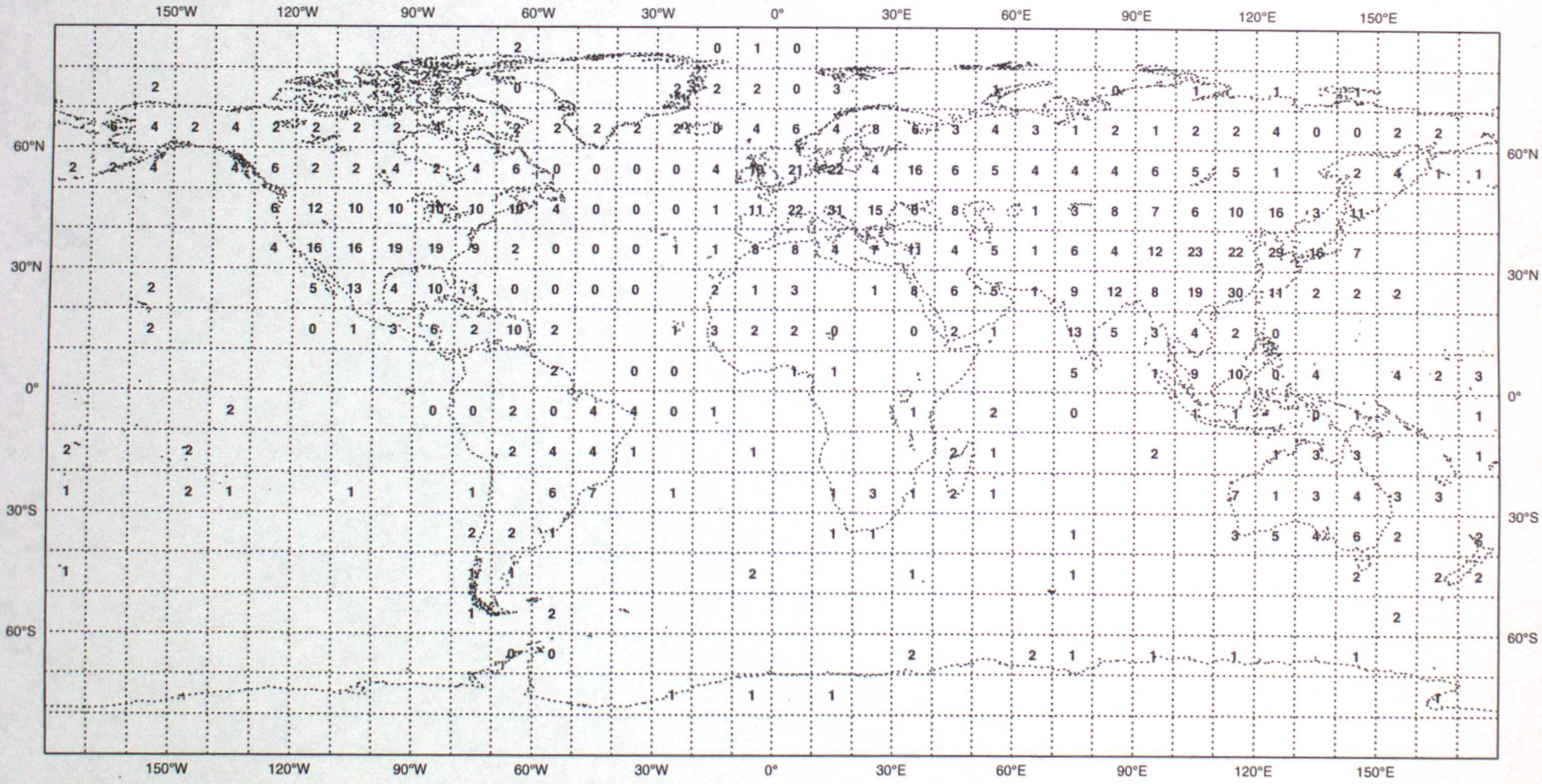

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
2 0 1 0
2 0 2 2 0 3 1 0 1 1 1
6 4 2 4 2 2 2 2 4 2 2 2 2 2 0 4 6 4 8 6 3 4 3 1 2 1 2 2 4 0 0 2 2
2 2 4 4 6 2 2 4 2 4 6 0 0 0 0 4 10 21 22 4 16 6 5 4 4 4 6 5 5 1 2 4 1 1
6 12 10 10 10 10 10 4 0 0 0 1 11 22 31 15 8 8 1 3 8 7 6 10 16 3 11
4 16 16 19 19 9 2 0 0 0 1 1 8 8 4 7 11 4 5 1 6 4 12 23 22 29 16 7
2 5 13 4 10 1 0 0 0 0 2 1 3 1 8 6 5 1 9 12 8 19 30 11 2 2 2
2 0 1 3 6 2 10 2 1 3 2 2 0 0 2 1 13 5 3 4 2 0
2 0 0 1 1 5 1 9 10 0 4 4 2 3
2 0 0 2 0 4 4 0 1 1 2 0 1 1 0 1 1
2 2 2 4 4 1 1 2 1 2 1 3 3 1
1 2 1 1 1 6 7 1 1 3 1 2 1 7 1 3 4 3 3
2 2 1 1 1 1 3 5 4 6 2 2
1 1 1 2 1 1 2 2 2
1 2 2
0 0 2 2 1 1 1 1
1 1 1 1

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 100.0 hPa

Element monitored :VECTOR WIND in m s^{-1}

Parameters monitored

:NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:UBIAS,VBIAS :Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.2

SELECTION CRITERIA : $\geq$ 10 observations and $\geq$ 15 m s^{-1} RMS vector wind.

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
07761	12	V	150	42/ 9	27	0	11	1.9	-2.7	15.9	1
43295	12	V	300	13/ 78	16	0	6	0.5	-1.0	15.9	1
43369	00	V	200	8/ 73	14	0	64	4.8	-0.7	22.9	2
43369	12	V	200	8/ 73	14	0	57	12.8	4.7	21.3	3
43371	00	V	100	8/ 77	12	0	50	10.8	4.1	17.0	1
43371	12	V	100	8/ 77	12	0	33	12.7	1.8	15.4	1
48568	12	V	150	7/ 101	12	0	100	14.6	11.1	20.3	3
61902	12	V	200	-8/ -14	17	0	64	18.5	11.1	24.6	2
63741	00	V	150	-1/ 37	26	0	53	18.2	3.1	23.2	1
63985	00	V	150	-5/ 55	29	0	20	9.4	4.5	15.1	1
64458	12	V	150	2/ 16	25	0	100	16.8	0.5	21.9	1
64910	12	V	150	4/ 10	16	0	100	15.3	-2.0	20.8	1
67083	12	V	150	-19/ 47	20	1	5	-5.5	-0.1	25.3	1
68512	12	V	150	-30/ 18	13	0	100	0.0	0.6	21.2	3
83746	00	V	250	-23/ -43	28	0	3	-3.8	0.8	15.1	1
85799	12	V	300	-41/ -73	21	0	9	5.0	0.8	16.8	1
94996	00	V	300	-29/ 168	16	1	18	-6.7	0.4	16.0	1
96035	00	V	300	4/ 99	10	0	10	0.9	5.0	21.4	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. AUGUST 2004
All hours
Global average number of observations in 24 hours = 1352

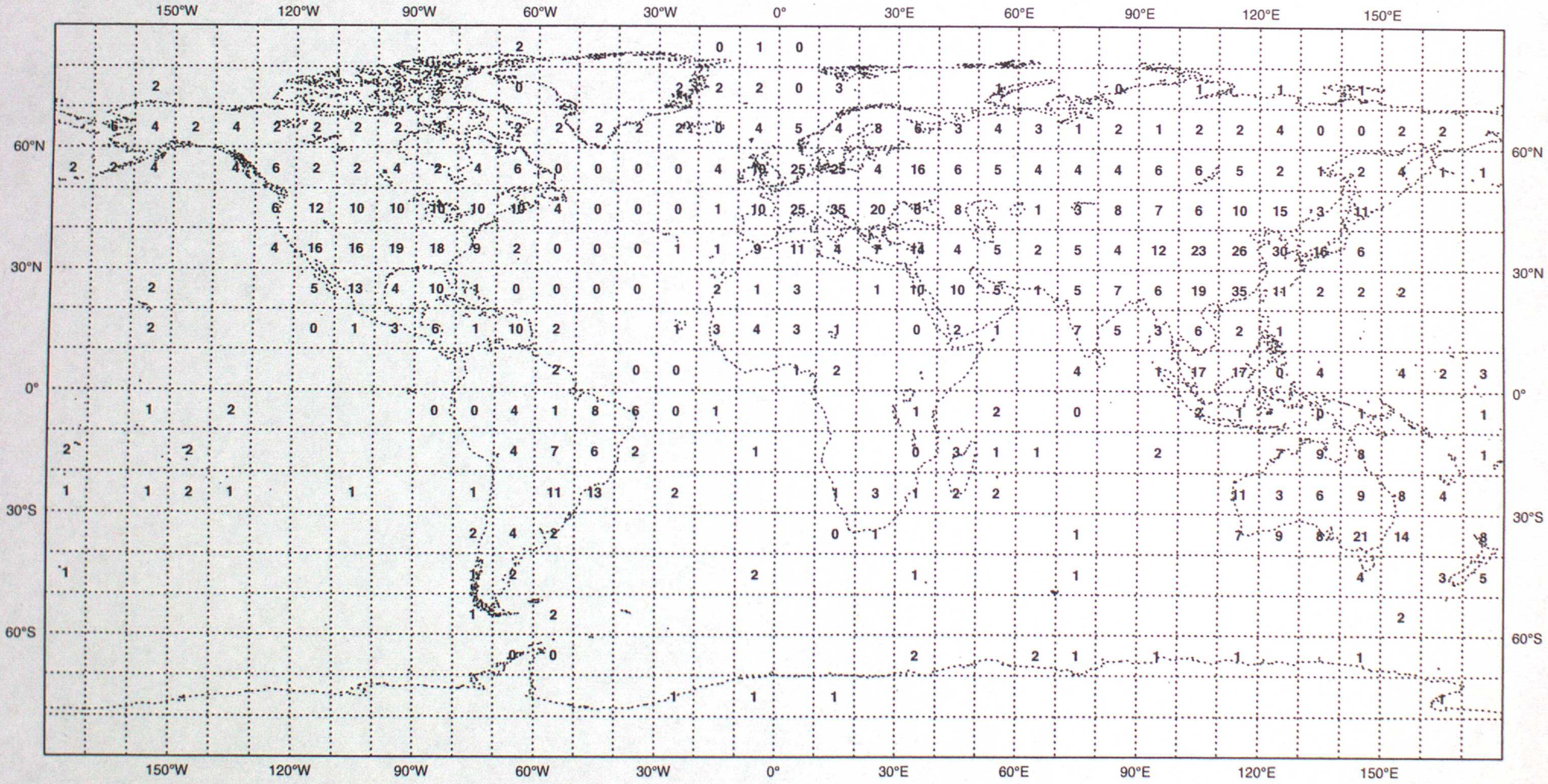

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS $\geq 10°$, with
SD $< 30°$, and
MAX SPREAD $< 10°$

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
42182	00	DD	29/ 77	12	10.4	9.0	26.9
58968	00	DD	25/ 122	17	12.9	5.7	18.1
62337	00	DD	31/ 34	27	-21.9	2.1	8.3
68512	12	DD	-30/ 18	16	10.0	6.8	27.7
78954	00	DD	13/ -59	10	-17.0	7.0	16.4
78954	12	DD	13/ -59	15	-16.4	6.1	22.5
91366	00	DD	9/ 168	20	11.0	9.7	29.2
91376	12	DD	7/ 171	20	10.5	6.0	23.8

Figure 10. SATOB 701 - 1000 hPa mean daily count. AUGUST 2004
Global average number of observations in 24 hours = 92505

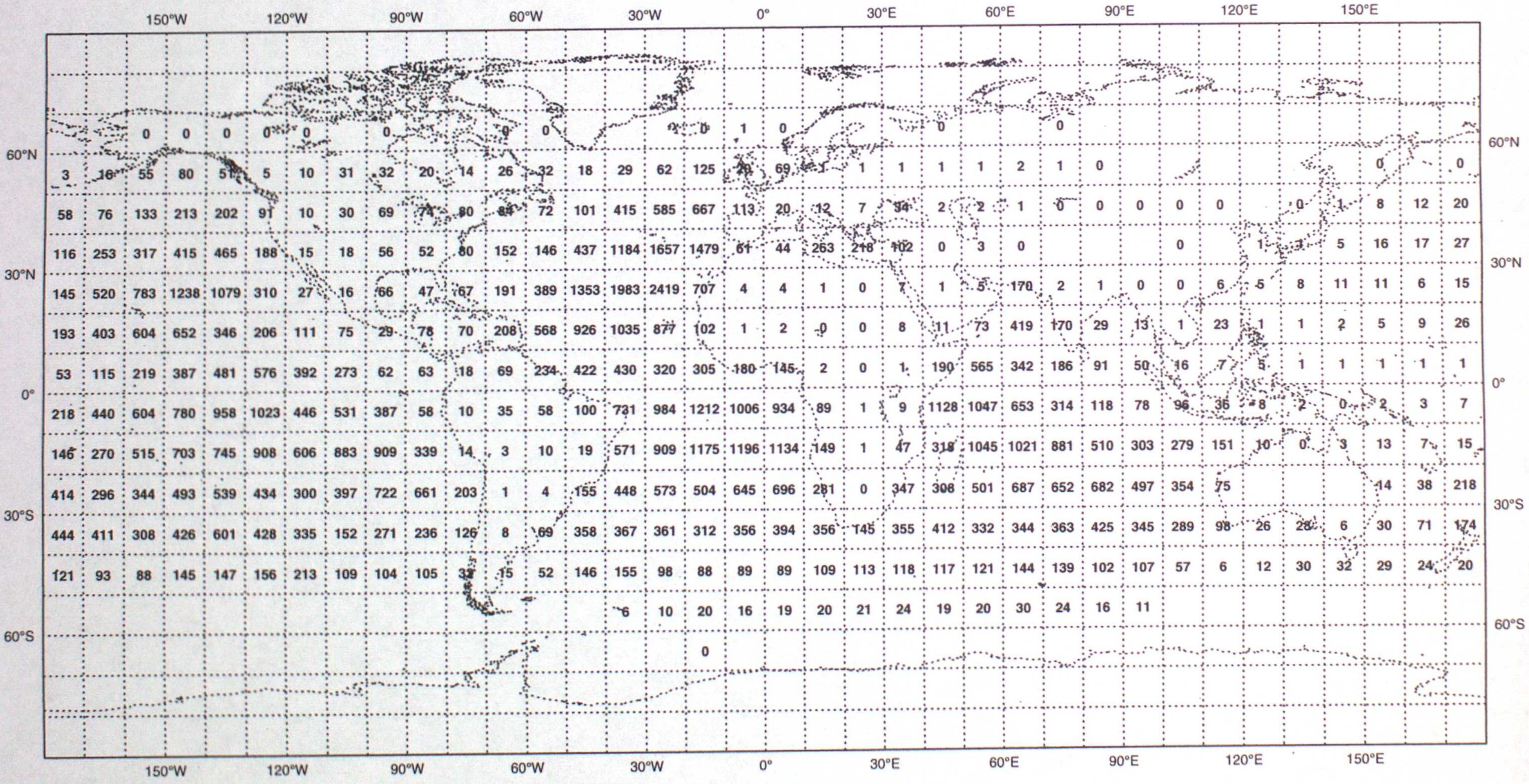

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0 0 0 0 0 0 1 0 0 0
3 16 55 80 51 5 10 31 32 20 14 26 32 18 29 62 125 20 69 1 1 1 1 1 2 1 0 0 0
58 76 133 213 202 91 10 30 69 74 80 84 72 101 415 585 667 113 20 12 7 34 2 2 1 0 0 0 0 0 0 1 8 12 20
116 253 317 415 465 188 15 18 56 52 80 152 146 437 1184 1657 1479 61 44 263 218 102 0 3 0 0 1 3 5 16 17 27
145 520 783 1238 1079 310 27 16 66 47 67 191 389 1353 1983 2419 707 4 4 1 0 7 1 5 170 2 1 0 0 6 5 8 11 11 6 15
193 403 604 652 346 206 111 75 29 78 70 208 568 926 1035 877 102 1 2 0 0 8 11 73 419 170 29 13 1 23 1 1 2 5 9 26
53 115 219 387 481 576 392 273 62 63 18 69 234 422 430 320 305 180 145 2 0 1 190 565 342 186 91 50 16 7 5 1 1 1 1 1
218 440 604 780 958 1023 446 531 387 58 10 35 58 100 731 984 1212 1006 934 89 1 9 1128 1047 653 314 118 78 96 36 8 2 0 2 3 7
146 270 515 703 745 908 606 883 909 339 14 3 10 19 571 909 1175 1196 1134 149 1 47 318 1045 1021 881 510 303 279 151 10 0 3 13 7 15
414 296 344 493 539 434 300 397 722 661 203 1 4 155 448 573 504 645 696 281 0 347 308 501 687 652 682 497 354 75 14 38 218
444 411 308 426 601 428 335 152 271 236 126 8 69 358 367 361 312 356 394 356 145 355 412 332 344 363 425 345 289 98 26 28 6 30 71 174
121 93 88 145 147 156 213 109 104 105 32 15 52 146 155 98 88 89 89 109 113 118 117 121 144 139 102 107 57 6 12 30 32 29 24 20
6 10 20 16 19 20 21 24 19 20 30 24 16 11
0

Figure 11. SATOB 701 - 1000 hPa vector mean wind. AUGUST 2004
All observations
Arrows are plotted where greater than 10 obs are present

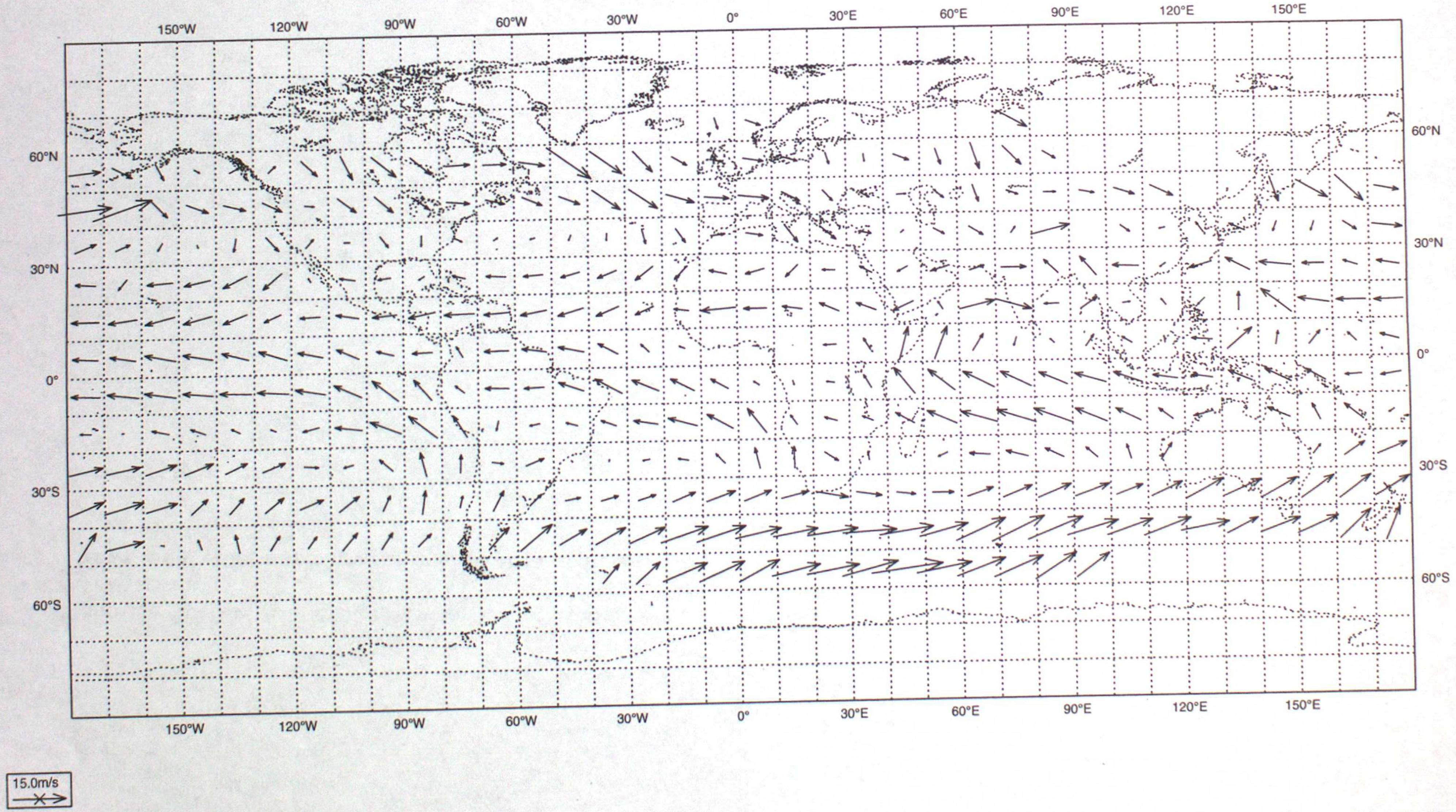

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. AUGUST 2004
All observations
Arrows are plotted where greater than 10 obs are present

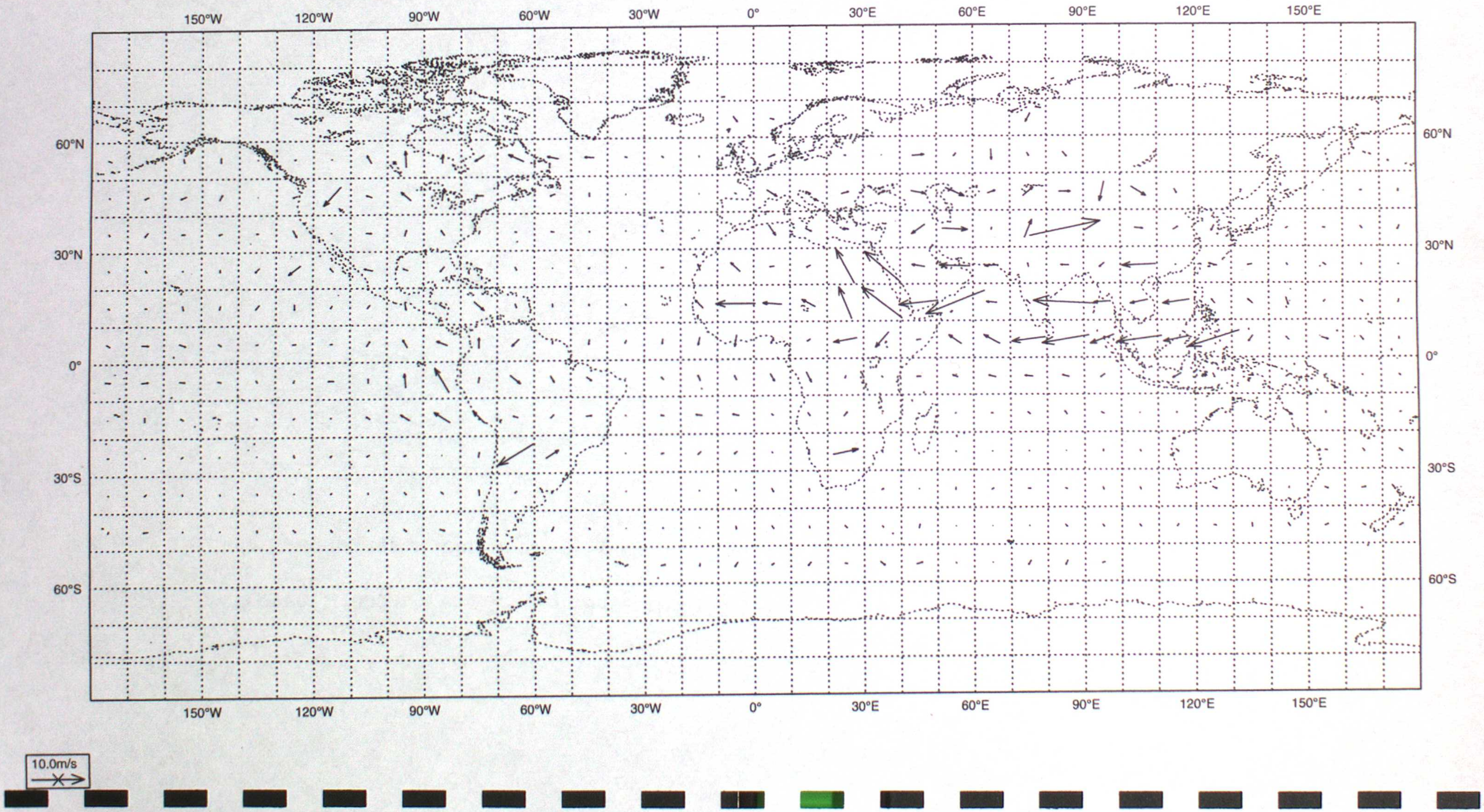
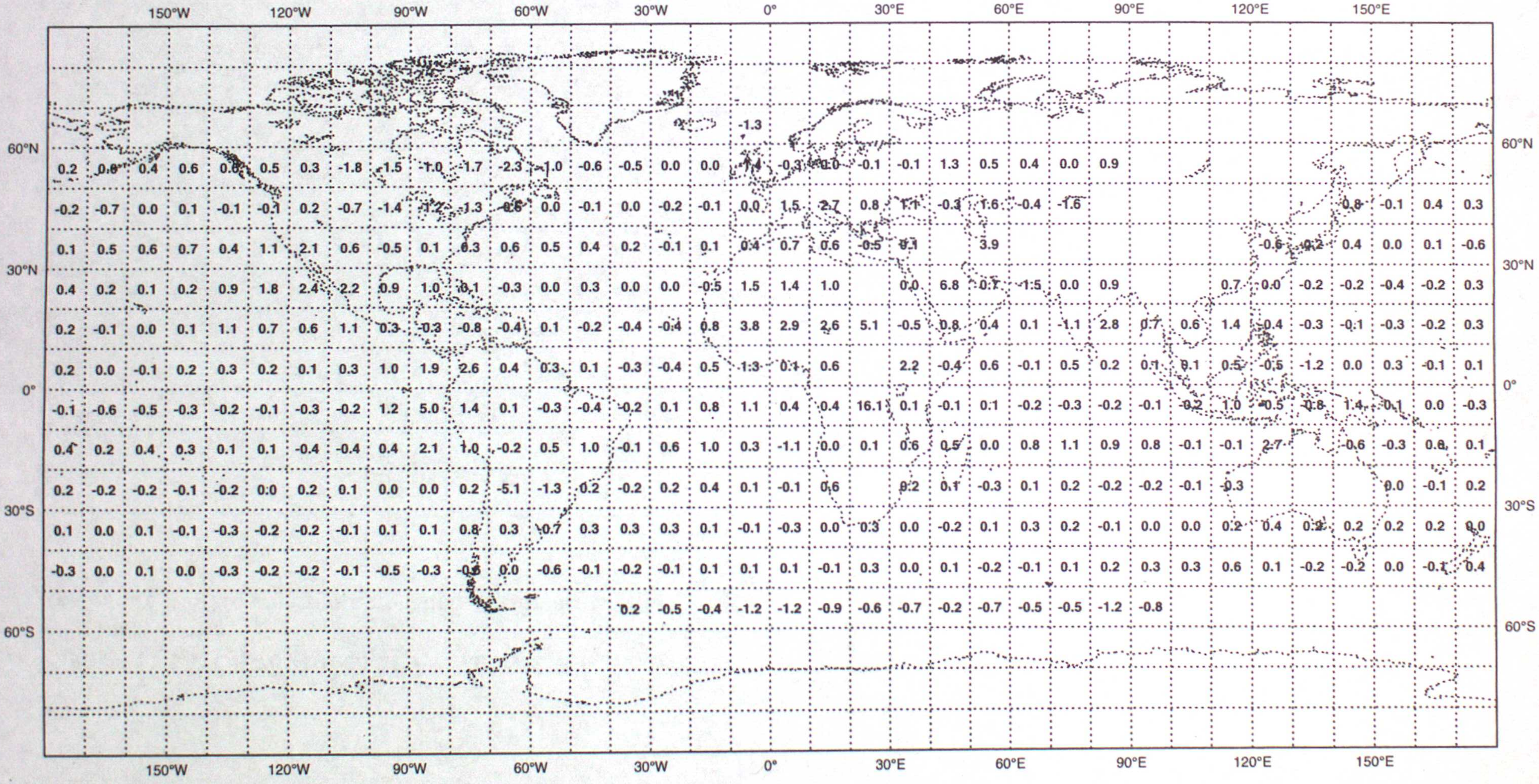
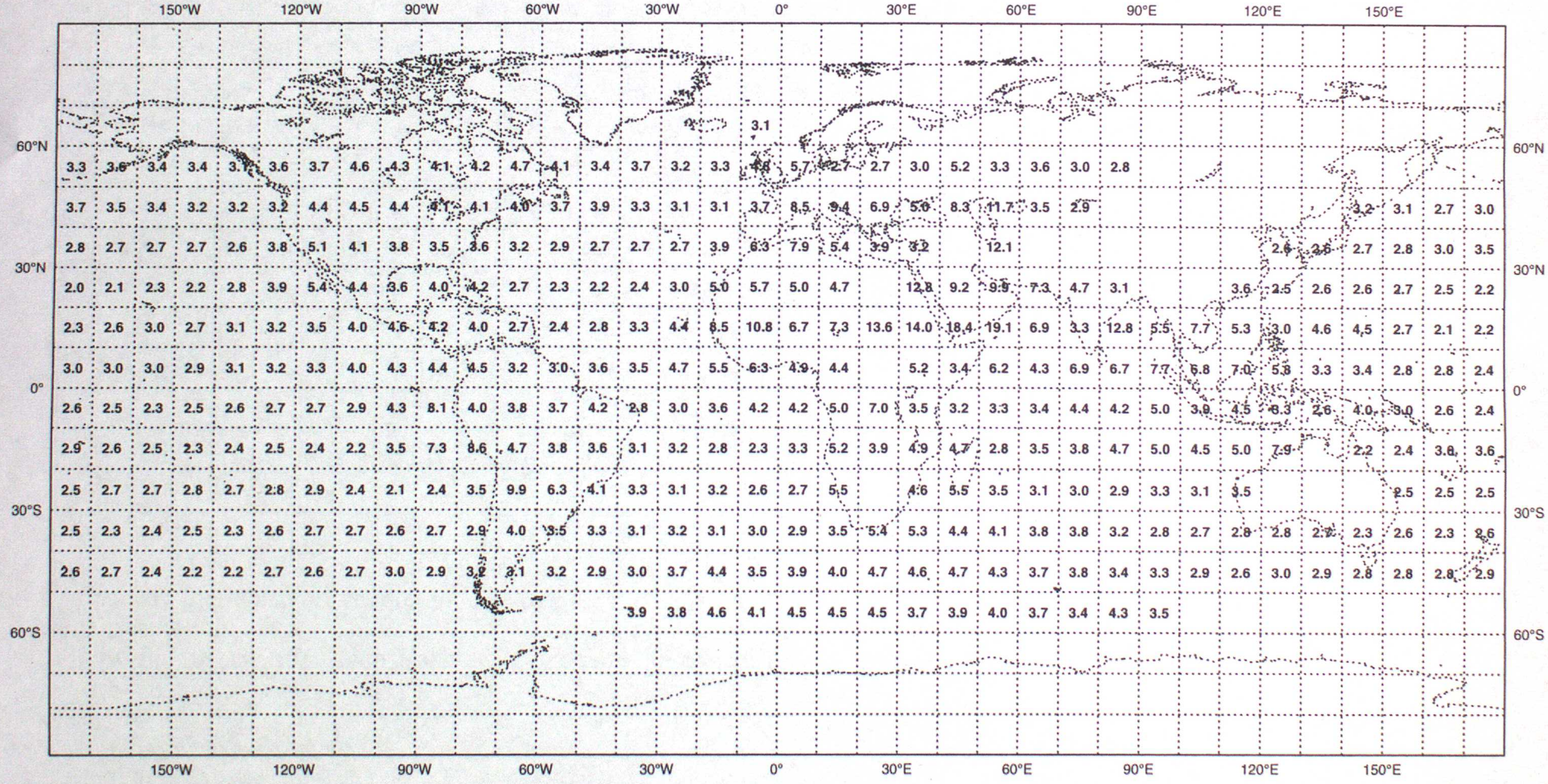

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). AUGUST 2004
All observations
Values are plotted where greater than 10 obs are present



150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-1.3
0.2 0.8 0.4 0.6 0.6 0.5 0.3 -1.8 -1.5 -1.0 -1.7 -2.3 -1.0 -0.6 -0.5 0.0 0.0 1.4 -0.3 0.0 -0.1 -0.1 1.3 0.5 0.4 0.0 0.9
-0.2 -0.7 0.0 0.1 -0.1 -0.1 0.2 -0.7 -1.4 -1.2 -1.3 -0.6 0.0 -0.1 0.0 -0.2 -0.1 0.0 1.5 2.7 0.8 1.1 -0.3 1.6 -0.4 -1.6 0.8 -0.1 0.4 0.3
0.1 0.5 0.6 0.7 0.4 1.1 2.1 0.6 -0.5 0.1 0.3 0.6 0.5 0.4 0.2 -0.1 0.1 0.4 0.7 0.6 -0.5 0.1 3.9 -0.6 0.2 0.4 0.0 0.1 -0.6
0.4 0.2 0.1 0.2 0.9 1.8 2.4 2.2 0.9 1.0 0.1 -0.3 0.0 0.3 0.0 0.0 -0.5 1.5 1.4 1.0 0.0 6.8 0.7 -1.5 0.0 0.9 0.7 0.0 -0.2 -0.2 -0.4 -0.2 0.3
0.2 -0.1 0.0 0.1 1.1 0.7 0.6 1.1 0.3 -0.3 -0.8 -0.4 0.1 -0.2 -0.4 -0.4 0.8 3.8 2.9 2.6 5.1 -0.5 0.8 0.4 0.1 -1.1 2.8 0.7 0.6 1.4 -0.4 -0.3 -0.1 -0.3 -0.2 0.3
0.2 0.0 -0.1 0.2 0.3 0.2 0.1 0.3 1.0 1.9 2.6 0.4 0.3 0.1 -0.3 -0.4 0.5 1.3 0.1 0.6 2.2 -0.4 0.6 -0.1 0.5 0.2 0.1 0.1 0.5 -0.5 -1.2 0.0 0.3 -0.1 0.1
-0.1 -0.6 -0.5 -0.3 -0.2 -0.1 -0.3 -0.2 1.2 5.0 1.4 0.1 -0.3 -0.4 -0.2 0.1 0.8 1.1 0.4 0.4 16.1 0.1 -0.1 0.1 -0.2 -0.3 -0.2 -0.1 -0.2 1.0 -0.5 -0.8 1.4 -0.1 0.0 -0.3
0.4 0.2 0.4 0.3 0.1 0.1 -0.4 -0.4 0.4 2.1 1.0 -0.2 0.5 1.0 -0.1 0.6 1.0 0.3 -1.1 0.0 0.1 0.6 0.5 0.0 0.8 1.1 0.9 0.8 -0.1 -0.1 2.7 -0.6 -0.3 0.6 0.1
0.2 -0.2 -0.2 -0.1 -0.2 0.0 0.2 0.1 0.0 0.0 0.2 -5.1 -1.3 0.2 -0.2 0.2 0.4 0.1 -0.1 0.6 0.2 0.1 -0.3 0.1 0.2 -0.2 -0.2 -0.1 -0.3 0.0 -0.1 0.2
0.1 0.0 0.1 -0.1 -0.3 -0.2 -0.2 -0.1 0.1 0.1 0.8 0.3 0.7 0.3 0.3 0.3 0.1 -0.1 -0.3 0.0 0.3 0.0 -0.2 0.1 0.3 0.2 -0.1 0.0 0.0 0.2 0.4 0.2 0.2 0.2 0.2 0.0
-0.3 0.0 0.1 0.0 -0.3 -0.2 -0.2 -0.1 -0.5 -0.3 -0.6 0.0 -0.6 -0.1 -0.2 -0.1 0.1 0.1 0.1 -0.1 0.3 0.0 0.1 -0.2 -0.1 0.1 0.2 0.3 0.3 0.6 0.1 -0.2 -0.2 0.0 -0.1 0.4
0.2 -0.5 -0.4 -1.2 -1.2 -0.9 -0.6 -0.7 -0.2 -0.7 -0.5 -0.5 -1.2 -0.8

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). AUGUST 2004
All observations
Values are plotted where greater than 10 obs are present


150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
3.1
3.3 3.6 3.4 3.4 3.1 3.6 3.7 4.6 4.3 4.1 4.2 4.7 4.1 3.4 3.7 3.2 3.3 4.8 5.7 2.7 2.7 3.0 5.2 3.3 3.6 3.0 2.8
3.7 3.5 3.4 3.2 3.2 3.2 4.4 4.5 4.4 4.1 4.1 4.0 3.7 3.9 3.3 3.1 3.1 3.7 8.5 9.4 6.9 5.0 8.3 11.7 3.5 2.9 3.2 3.1 2.7 3.0
2.8 2.7 2.7 2.7 2.6 3.8 5.1 4.1 3.8 3.5 3.6 3.2 2.9 2.7 2.7 2.7 3.9 6.3 7.9 5.4 3.9 3.2 12.1 2.6 2.6 2.7 2.8 3.0 3.5
2.0 2.1 2.3 2.2 2.8 3.9 5.4 4.4 3.6 4.0 4.2 2.7 2.3 2.2 2.4 3.0 5.0 5.7 5.0 4.7 12.8 9.2 9.9 7.3 4.7 3.1 3.6 2.5 2.6 2.6 2.7 2.5 2.2
2.3 2.6 3.0 2.7 3.1 3.2 3.5 4.0 4.6 4.2 4.0 2.7 2.4 2.8 3.3 4.4 8.5 10.8 6.7 7.3 13.6 14.0 18.4 19.1 6.9 3.3 12.8 5.5 7.7 5.3 3.0 4.6 4.5 2.7 2.1 2.2
3.0 3.0 3.0 2.9 3.1 3.2 3.3 4.0 4.3 4.4 4.5 3.2 3.0 3.6 3.5 4.7 5.5 6.3 4.9 4.4 5.2 3.4 6.2 4.3 6.9 6.7 7.7 6.8 7.0 5.8 3.3 3.4 2.8 2.8 2.4
2.6 2.5 2.3 2.5 2.6 2.7 2.7 2.9 4.3 8.1 4.0 3.8 3.7 4.2 2.8 3.0 3.6 4.2 4.2 5.0 7.0 3.5 3.2 3.3 3.4 4.4 4.2 5.0 3.9 4.5 8.3 2.6 4.0 3.0 2.6 2.4
2.9 2.6 2.5 2.3 2.4 2.5 2.4 2.2 3.5 7.3 8.6 4.7 3.8 3.6 3.1 3.2 2.8 2.3 3.3 5.2 3.9 4.9 4.7 2.8 3.5 3.8 4.7 5.0 4.5 5.0 7.9 2.2 2.4 3.8 3.6
2.5 2.7 2.7 2.8 2.7 2.8 2.9 2.4 2.1 2.4 3.5 9.9 6.3 4.1 3.3 3.1 3.2 2.6 2.7 5.5 4.6 5.5 3.5 3.1 3.0 2.9 3.3 3.1 3.5 2.5 2.5 2.5
2.5 2.3 2.4 2.5 2.3 2.6 2.7 2.7 2.6 2.7 2.9 4.0 3.5 3.3 3.1 3.2 3.1 3.0 2.9 3.5 5.4 5.3 4.4 4.1 3.8 3.8 3.2 2.8 2.7 2.8 2.8 2.7 2.3 2.6 2.3 2.6
2.6 2.7 2.4 2.2 2.2 2.7 2.6 2.7 3.0 2.9 3.2 3.1 3.2 2.9 3.0 3.7 4.4 3.5 3.9 4.0 4.7 4.6 4.7 4.3 3.7 3.8 3.4 3.3 2.9 2.6 3.0 2.9 2.8 2.8 2.8 2.9
3.9 3.8 4.6 4.1 4.5 4.5 4.5 3.7 3.9 4.0 3.7 3.4 4.3 3.5

MONITORING OF SATELLITE WINDS

MONITORING CENTRE: EXETER

MONTH: Aug 2004

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa :Mean wind :Mean observation minus background vector wind differences :Mean observation minus background speed differences :RMS of observation minus background vector differences

Figure 15. SATOB 401 - 700 hPa mean daily count. AUGUST 2004
Global average number of observations in 24 hours = 15190

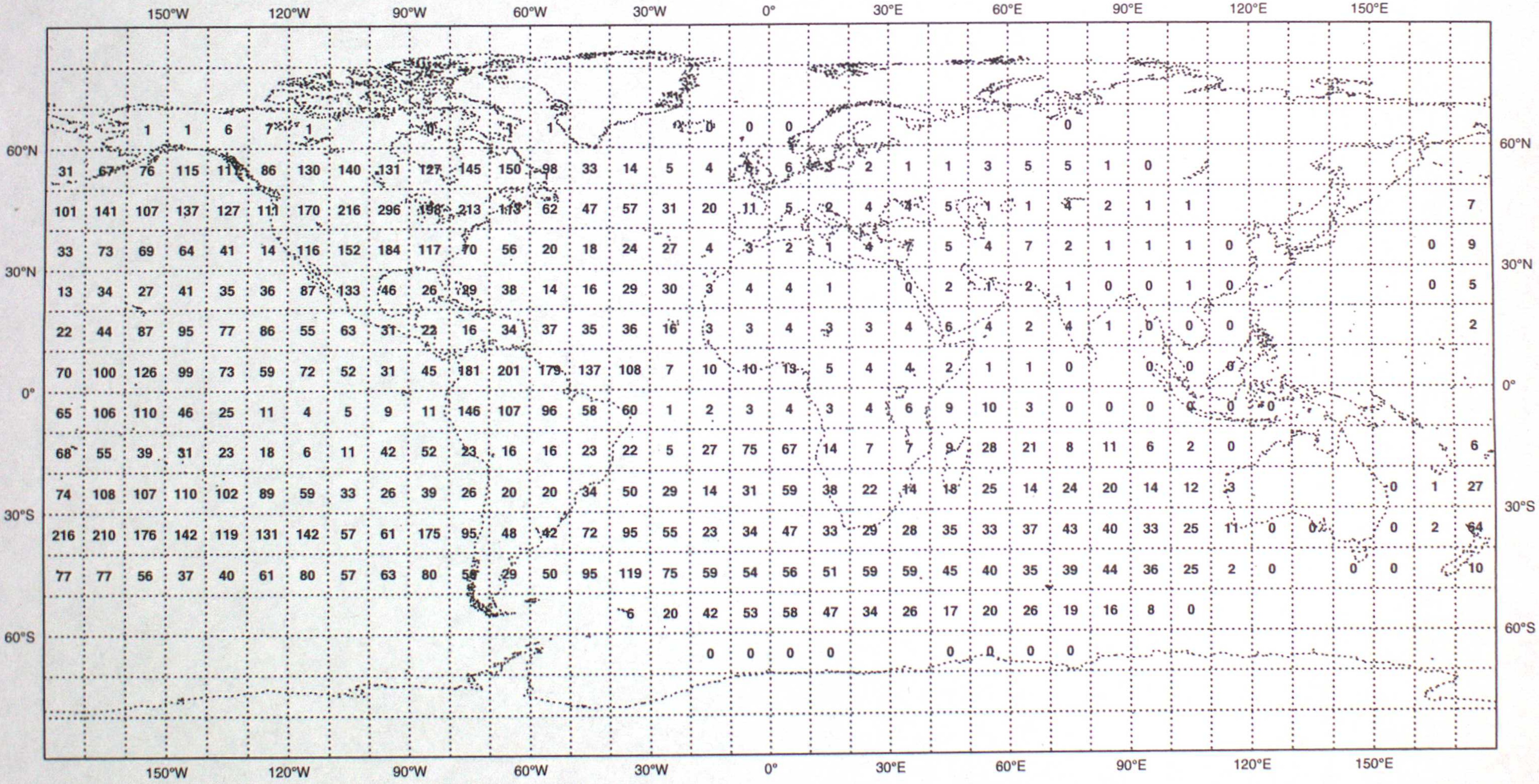

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
1 1 6 7 1 1 1 0 0 0 0
31 67 76 115 11 86 130 140 131 127 145 150 98 33 14 5 4 6 3 2 1 1 3 5 5 1 0
101 141 107 137 127 111 170 216 296 198 213 113 62 47 57 31 20 11 5 2 4 4 5 1 1 4 2 1 1 7
33 73 69 64 41 14 116 152 184 117 70 56 20 18 24 27 4 3 2 1 4 7 5 4 7 2 1 1 1 0 0 9
13 34 27 41 35 36 87 133 46 26 29 38 14 16 29 30 3 4 4 1 0 2 1 2 1 0 0 1 0 0 5
22 44 87 95 77 86 55 63 31 22 16 34 37 35 36 16 3 3 4 3 3 4 6 4 2 4 1 0 0 0 2
70 100 126 99 73 59 72 52 31 45 181 201 179 137 108 7 10 10 13 5 4 4 2 1 1 0 0 0 0
65 106 110 46 25 11 4 5 9 11 146 107 96 58 60 1 2 3 4 3 4 6 9 10 3 0 0 0 0 0 0
68 55 39 31 23 18 6 11 42 52 23 16 16 23 22 5 27 75 67 14 7 7 9 28 21 8 11 6 2 0 6
74 108 107 110 102 89 59 33 26 39 26 20 20 34 50 29 14 31 59 38 22 14 18 25 14 24 20 14 12 3 0 1 27
216 210 176 142 119 131 142 57 61 175 95 48 42 72 95 55 23 34 47 33 29 28 35 33 37 43 40 33 25 11 0 0 0 2 64
77 77 56 37 40 61 80 57 63 80 58 29 50 95 119 75 59 54 56 51 59 59 45 40 35 39 44 36 25 2 0 0 0 10
6 20 42 53 58 47 34 26 17 20 26 19 16 8 0
0 0 0 0 0 0 0 0

Figure 16. SATOB 401 - 700 hPa vector mean wind. AUGUST 2004
All observations
Arrows are plotted where greater than 10 obs are present

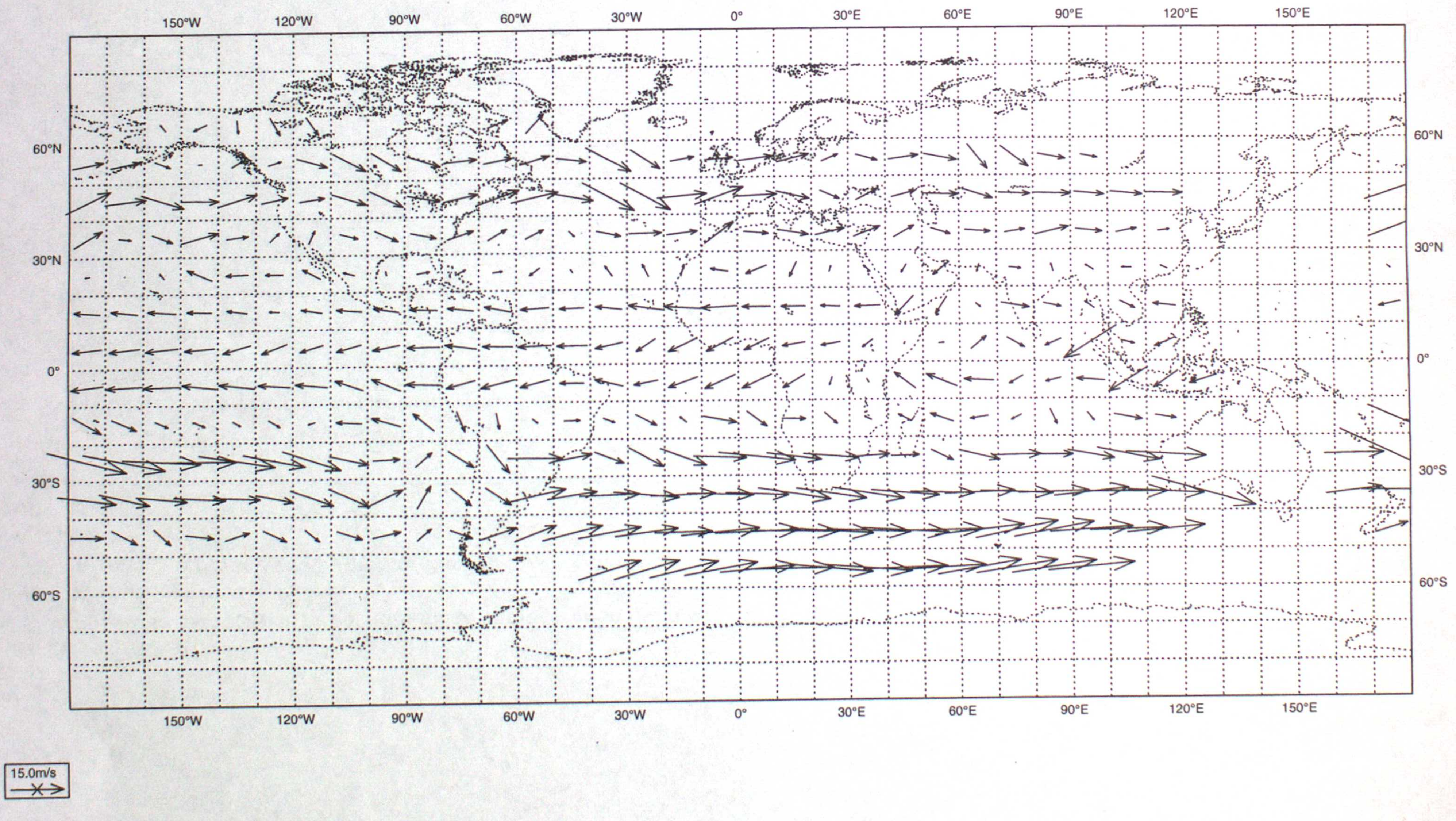

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. AUGUST 2004
All observations
Arrows are plotted where greater than 10 obs are present

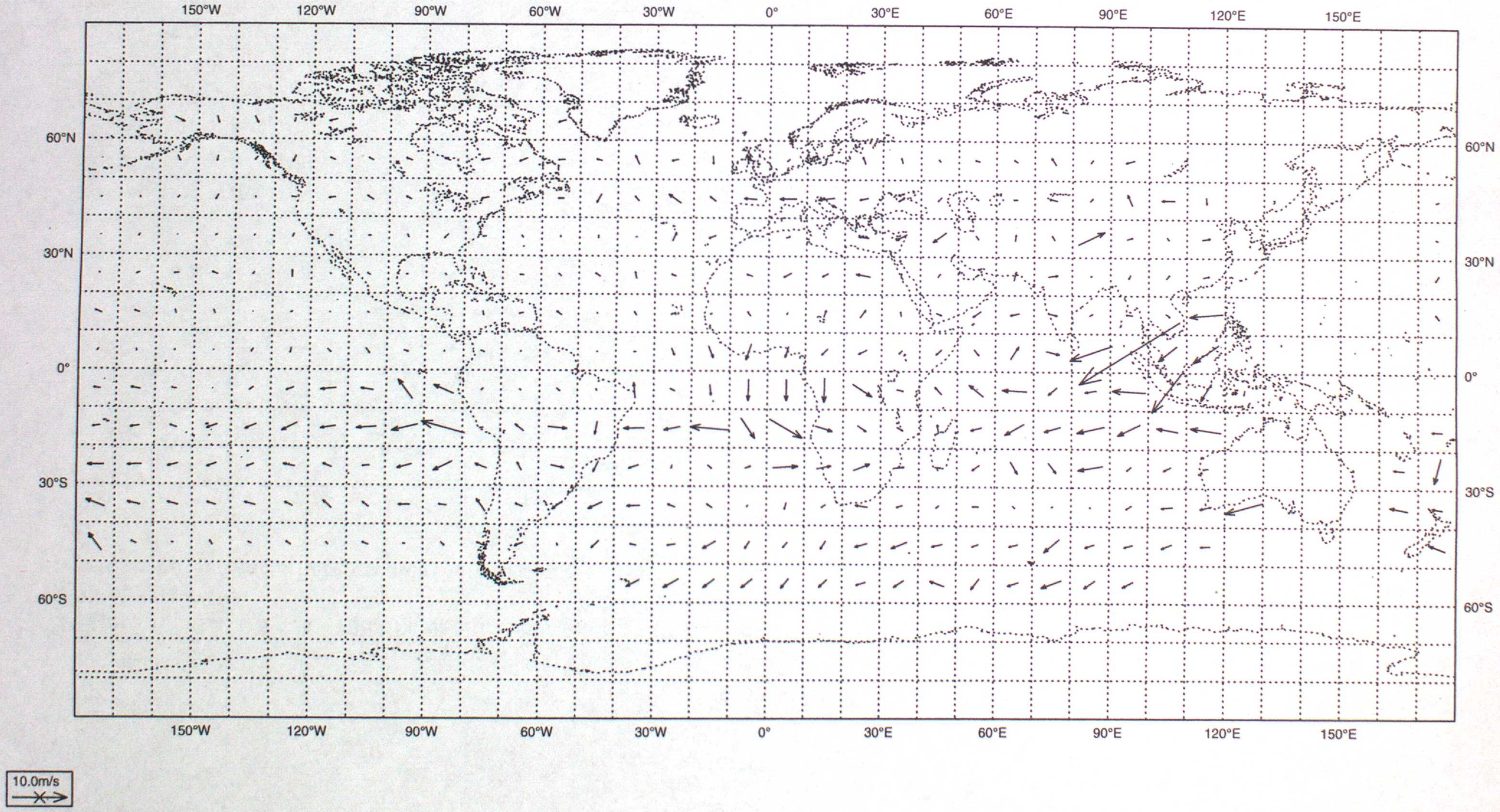

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). AUGUST 2004
All observations
Values are plotted where greater than 10 obs are present

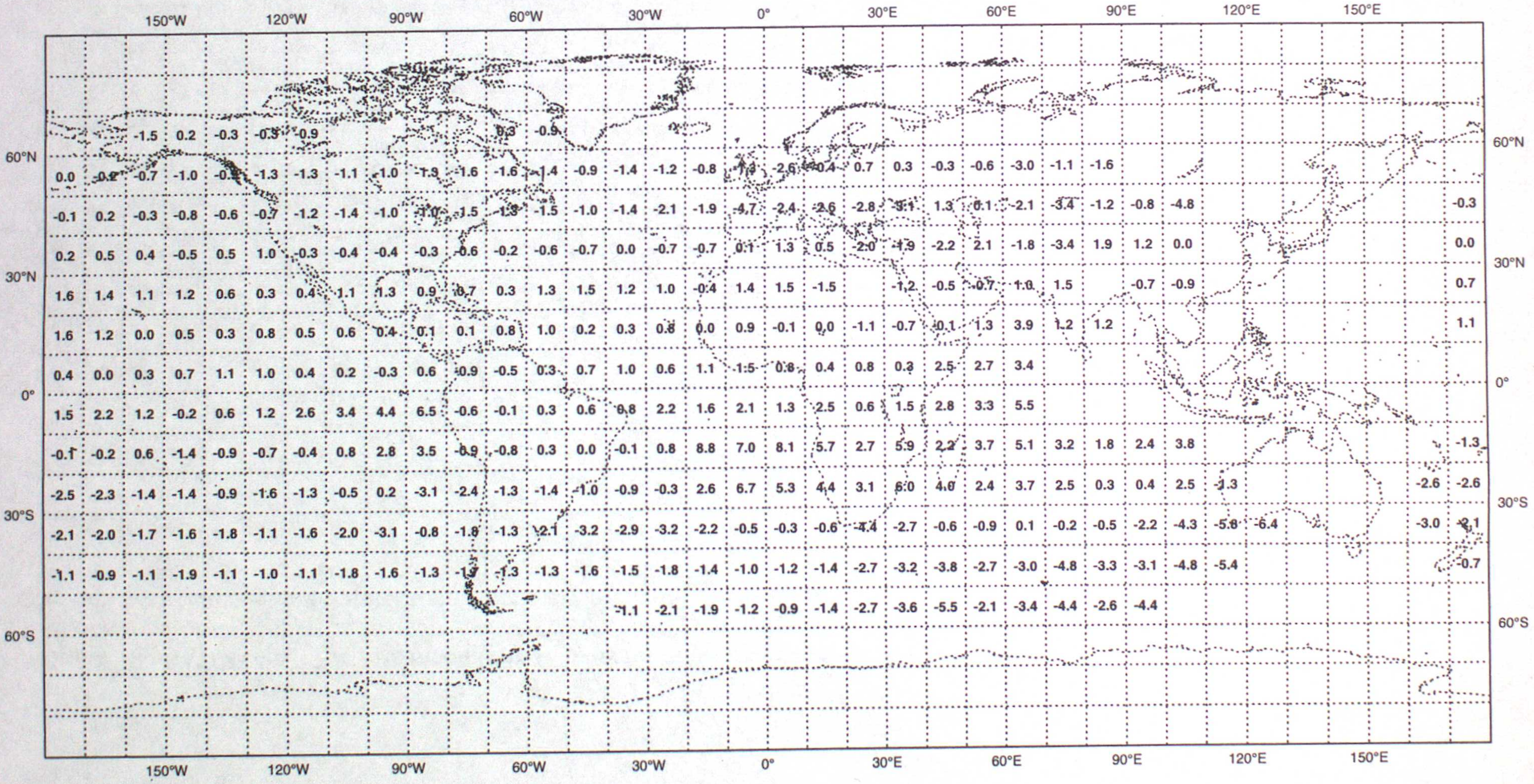

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-1.5 0.2 -0.3 -0.3 -0.9 0.3 -0.9
0.0 -0.2 -0.7 -1.0 -0.8 -1.3 -1.3 -1.1 -1.0 -1.3 -1.6 -1.6 -1.4 -0.9 -1.4 -1.2 -0.8 -1.4 -2.6 -0.4 0.7 0.3 -0.3 -0.6 -3.0 -1.1 -1.6
-0.1 0.2 -0.3 -0.8 -0.6 -0.7 -1.2 -1.4 -1.0 -1.0 -1.5 -1.3 -1.5 -1.0 -1.4 -2.1 -1.9 -4.7 -2.4 -2.6 -2.8 -3.1 1.3 0.1 -2.1 -3.4 -1.2 -0.8 -4.8 -0.3
0.2 0.5 0.4 -0.5 0.5 1.0 -0.3 -0.4 -0.4 -0.3 -0.6 -0.2 -0.6 -0.7 0.0 -0.7 -0.7 0.1 1.3 0.5 -2.0 -1.9 -2.2 2.1 -1.8 -3.4 1.9 1.2 0.0 0.0
1.6 1.4 1.1 1.2 0.6 0.3 0.4 1.1 1.3 0.9 0.7 0.3 1.3 1.5 1.2 1.0 -0.4 1.4 1.5 -1.5 -1.2 -0.5 -0.7 1.0 1.5 -0.7 -0.9 0.7
1.6 1.2 0.0 0.5 0.3 0.8 0.5 0.6 0.4 0.1 0.1 0.8 1.0 0.2 0.3 0.8 0.0 0.9 -0.1 0.0 -1.1 -0.7 0.1 1.3 3.9 1.2 1.2 1.1
0.4 0.0 0.3 0.7 1.1 1.0 0.4 0.2 -0.3 0.6 0.9 -0.5 0.3 0.7 1.0 0.6 1.1 1.5 0.8 0.4 0.8 0.3 2.5 2.7 3.4
1.5 2.2 1.2 -0.2 0.6 1.2 2.6 3.4 4.4 6.5 -0.6 -0.1 0.3 0.6 0.8 2.2 1.6 2.1 1.3 2.5 0.6 1.5 2.8 3.3 5.5
-0.1 -0.2 0.6 -1.4 -0.9 -0.7 -0.4 0.8 2.8 3.5 -0.9 -0.8 0.3 0.0 -0.1 0.8 8.8 7.0 8.1 5.7 2.7 5.9 2.2 3.7 5.1 3.2 1.8 2.4 3.8 -1.3
-2.5 -2.3 -1.4 -1.4 -0.9 -1.6 -1.3 -0.5 0.2 -3.1 -2.4 -1.3 -1.4 -1.0 -0.9 -0.3 2.6 6.7 5.3 4.4 3.1 6.0 4.0 2.4 3.7 2.5 0.3 0.4 2.5 -1.3 -2.6 -2.6
-2.1 -2.0 -1.7 -1.6 -1.8 -1.1 -1.6 -2.0 -3.1 -0.8 -1.8 -1.3 -2.1 -3.2 -2.9 -3.2 -2.2 -0.5 -0.3 -0.6 -4.4 -2.7 -0.6 -0.9 0.1 -0.2 -0.5 -2.2 -4.3 -5.8 -6.4 -3.0 -2.1
-1.1 -0.9 -1.1 -1.9 -1.1 -1.0 -1.1 -1.8 -1.6 -1.3 -1.3 -1.3 -1.3 -1.6 -1.5 -1.8 -1.4 -1.0 -1.2 -1.4 -2.7 -3.2 -3.8 -2.7 -3.0 -4.8 -3.3 -3.1 -4.8 -5.4 -0.7
-1.1 -2.1 -1.9 -1.2 -0.9 -1.4 -2.7 -3.6 -5.5 -2.1 -3.4 -4.4 -2.6 -4.4

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). AUGUST 2004
All observations
Values are plotted where greater than 10 obs are present

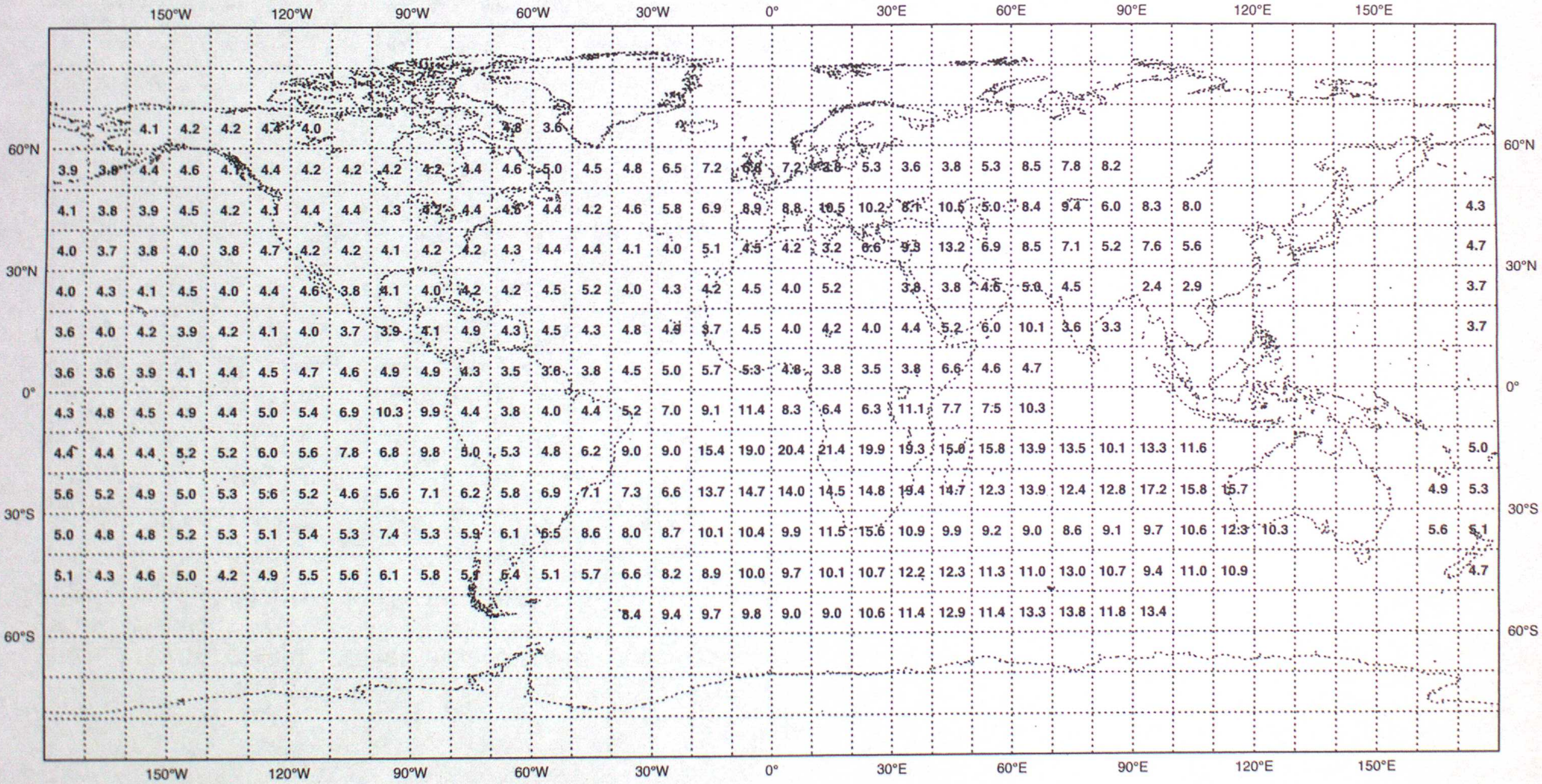
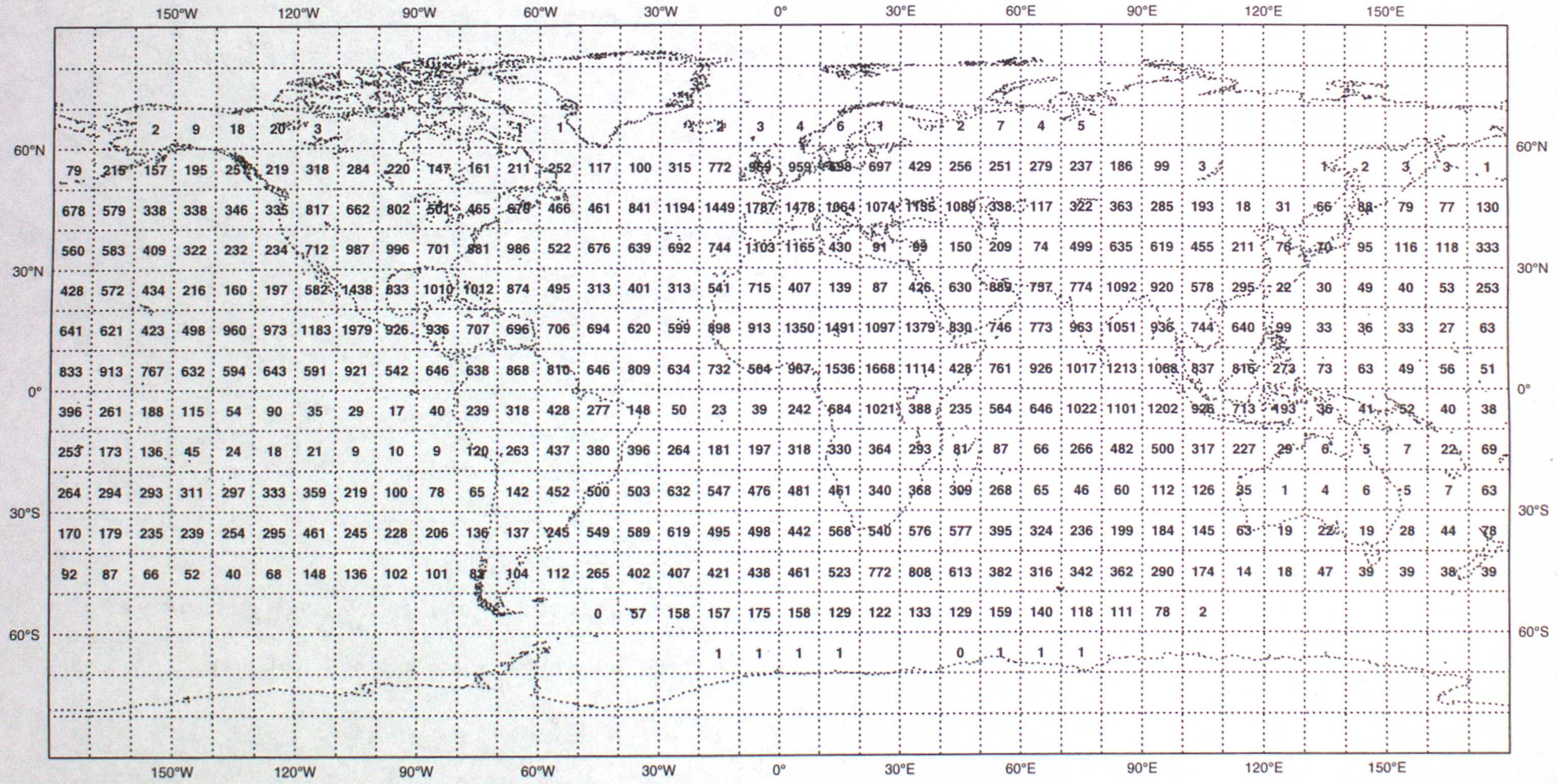

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
4.1 4.2 4.2 4.4 4.0 3.8 3.6
3.9 3.8 4.4 4.6 4.1 4.4 4.2 4.2 4.2 4.2 4.4 4.6 5.0 4.5 4.8 6.5 7.2 6.8 7.2 3.8 5.3 3.6 3.8 5.3 8.5 7.8 8.2
4.1 3.8 3.9 4.5 4.2 4.3 4.4 4.4 4.3 4.2 4.4 4.6 4.4 4.2 4.6 5.8 6.9 8.9 8.8 10.5 10.2 8.1 10.5 5.0 8.4 9.4 6.0 8.3 8.0 4.3
4.0 3.7 3.8 4.0 3.8 4.7 4.2 4.2 4.1 4.2 4.2 4.3 4.4 4.4 4.1 4.0 5.1 4.5 4.2 3.2 6.6 9.3 13.2 6.9 8.5 7.1 5.2 7.6 5.6 4.7
4.0 4.3 4.1 4.5 4.0 4.4 4.6 3.8 4.1 4.0 4.2 4.2 4.5 5.2 4.0 4.3 4.2 4.5 4.0 5.2 3.8 3.8 4.6 5.0 4.5 2.4 2.9 3.7
3.6 4.0 4.2 3.9 4.2 4.1 4.0 3.7 3.9 4.1 4.9 4.3 4.5 4.3 4.8 4.9 3.7 4.5 4.0 4.2 4.0 4.4 5.2 6.0 10.1 3.6 3.3 3.7
3.6 3.6 3.9 4.1 4.4 4.5 4.7 4.6 4.9 4.9 4.3 3.5 3.8 3.8 4.5 5.0 5.7 5.3 4.8 3.8 3.5 3.8 6.6 4.6 4.7
4.3 4.8 4.5 4.9 4.4 5.0 5.4 6.9 10.3 9.9 4.4 3.8 4.0 4.4 5.2 7.0 9.1 11.4 8.3 6.4 6.3 11.1 7.7 7.5 10.3
4.4 4.4 4.4 5.2 5.2 6.0 5.6 7.8 6.8 9.8 5.0 5.3 4.8 6.2 9.0 9.0 15.4 19.0 20.4 21.4 19.9 19.3 15.6 15.8 13.9 13.5 10.1 13.3 11.6 5.0
5.6 5.2 4.9 5.0 5.3 5.6 5.2 4.6 5.6 7.1 6.2 5.8 6.9 7.1 7.3 6.6 13.7 14.7 14.0 14.5 14.8 19.4 14.7 12.3 13.9 12.4 12.8 17.2 15.8 15.7 4.9 5.3
5.0 4.8 4.8 5.2 5.3 5.1 5.4 5.3 7.4 5.3 5.9 6.1 6.5 8.6 8.0 8.7 10.1 10.4 9.9 11.5 15.6 10.9 9.9 9.2 9.0 8.6 9.1 9.7 10.6 12.3 10.3 5.6 5.1
5.1 4.3 4.6 5.0 4.2 4.9 5.5 5.6 6.1 5.8 5.1 5.4 5.1 5.7 6.6 8.2 8.9 10.0 9.7 10.1 10.7 12.2 12.3 11.3 11.0 13.0 10.7 9.4 11.0 10.9 4.7
8.4 9.4 9.7 9.8 9.0 9.0 10.6 11.4 12.9 11.4 13.3 13.8 11.8 13.4

Figure 20. SATOB 101 - 400 hPa mean daily count. AUGUST 2004
Global average number of observations in 24 hours = 165551



		2	9	18	20	3					1	1				2	3	4	6	1		2	7	4	5										
79	215	157	195	25	219	318	284	220	147	161	211	252	117	100	315	772	959	959	698	697	429	256	251	279	237	186	99	3			1	2	3	3	1
678	579	338	338	346	335	817	662	802	501	465	678	466	461	841	1194	1449	1787	1478	1064	1074	1135	1089	338	117	322	363	285	193	18	31	66	88	79	77	130
560	583	409	322	232	234	712	987	996	701	881	986	522	676	639	692	744	1103	1165	430	91	89	150	209	74	499	635	619	455	211	76	70	95	116	118	333
428	572	434	216	160	197	582	1438	833	1010	1012	874	495	313	401	313	541	715	407	139	87	426	630	889	757	774	1092	920	578	295	22	30	49	40	53	253
641	621	423	498	960	973	1183	1979	926	936	707	696	706	694	620	599	898	913	1350	1491	1097	1379	830	746	773	963	1051	936	744	640	99	33	36	33	27	63
833	913	767	632	594	643	591	921	542	646	638	868	810	646	809	634	732	564	967	1536	1668	1114	428	761	926	1017	1213	1068	837	816	273	73	63	49	56	51
396	261	188	115	54	90	35	29	17	40	239	318	428	277	148	50	23	39	242	684	1021	388	235	564	646	1022	1101	1202	926	713	493	36	41	52	40	38
253	173	136	45	24	18	21	9	10	9	120	263	437	380	396	264	181	197	318	330	364	293	81	87	66	266	482	500	317	227	29	6	5	7	22	69
264	294	293	311	297	333	359	219	100	78	65	142	452	500	503	632	547	476	481	461	340	368	309	268	65	46	60	112	126	35	1	4	6	5	7	63
170	179	235	239	254	295	461	245	228	206	136	137	245	549	589	619	495	498	442	568	540	576	577	395	324	236	199	184	145	63	19	22	19	28	44	78
92	87	66	52	40	68	148	136	102	101	82	104	112	265	402	407	421	438	461	523	772	808	613	382	316	342	362	290	174	14	18	47	39	39	38	39
													0	57	158	157	175	158	129	122	133	129	159	140	118	111	78	2							
																1	1	1	1			0	1	1	1										

Figure 21. SATOB 101 - 400 hPa vector mean wind. AUGUST 2004
All observations
Arrows are plotted where greater than 10 obs are present

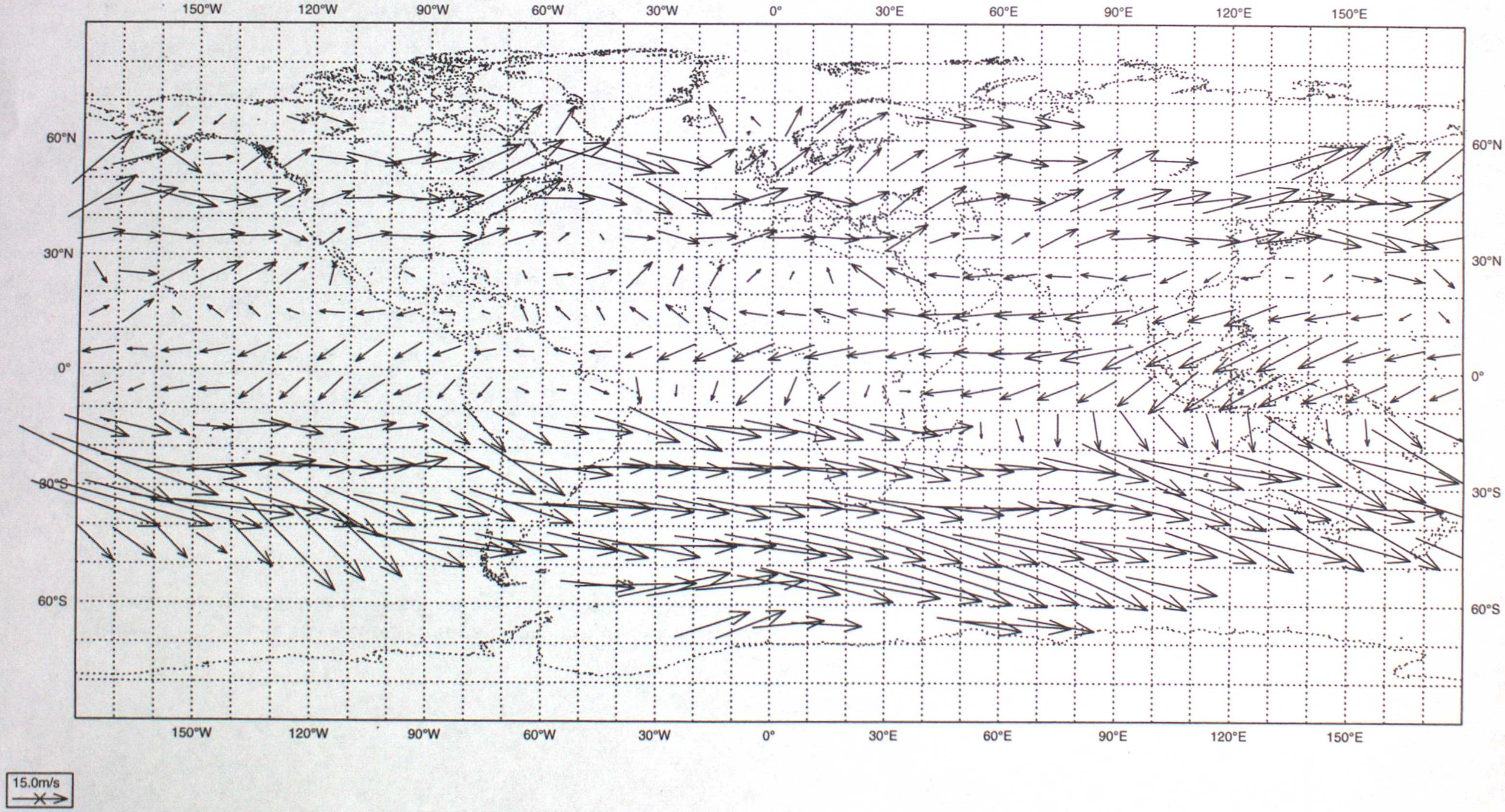

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. AUGUST 2004
All observations
Arrows are plotted where greater than 10 obs are present

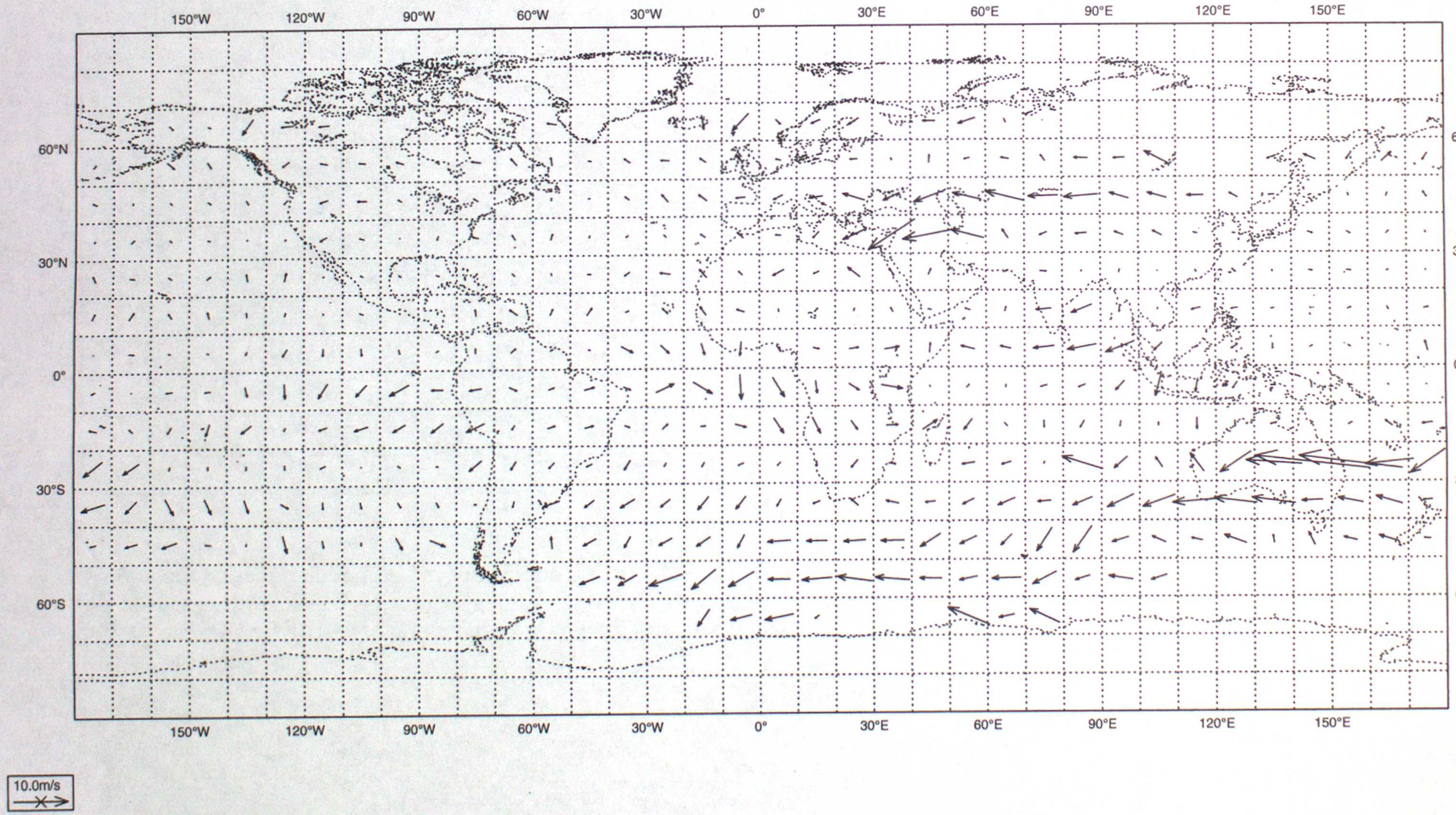

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). AUGUST 2004
All observations
Values are plotted where greater than 10 obs are present

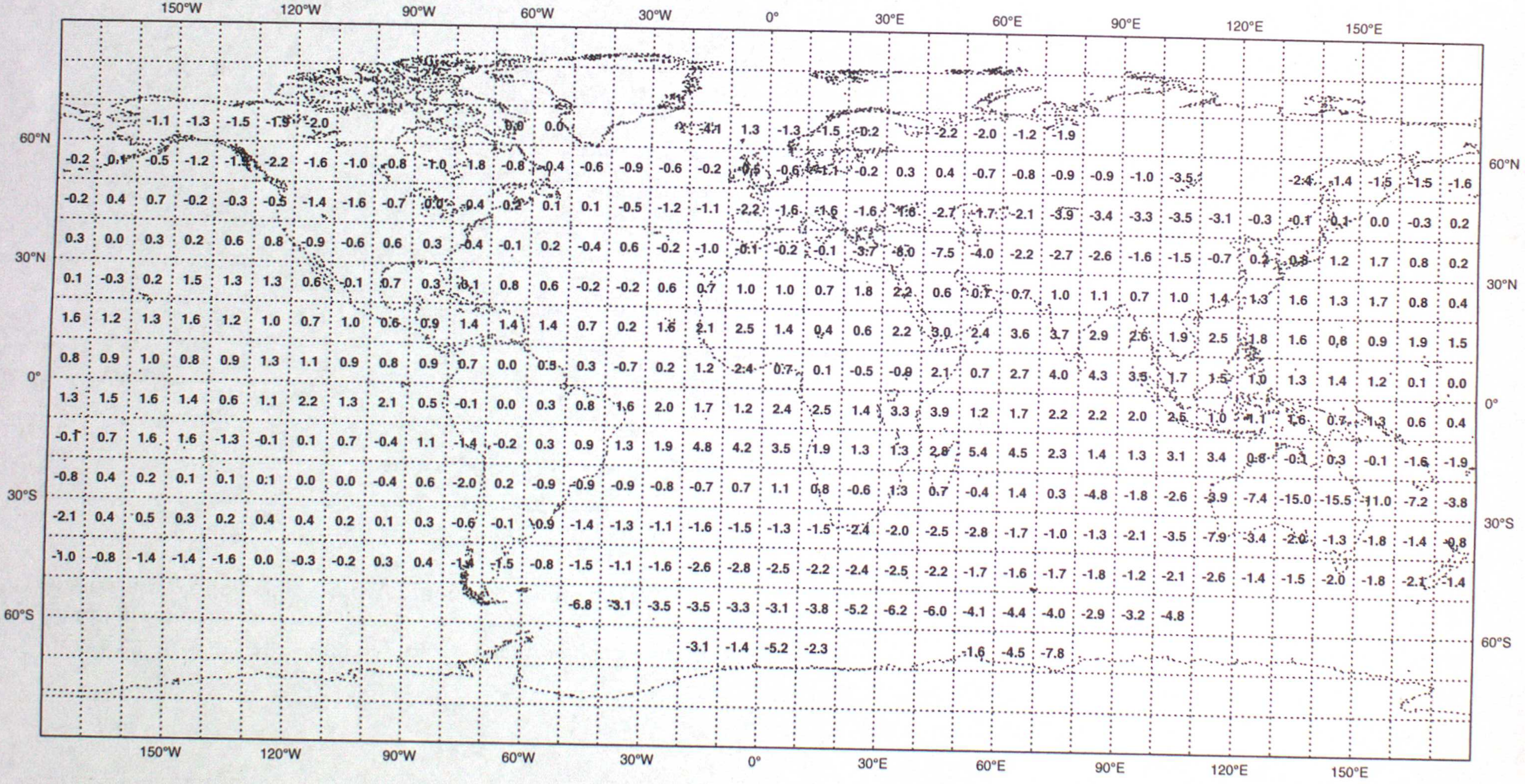
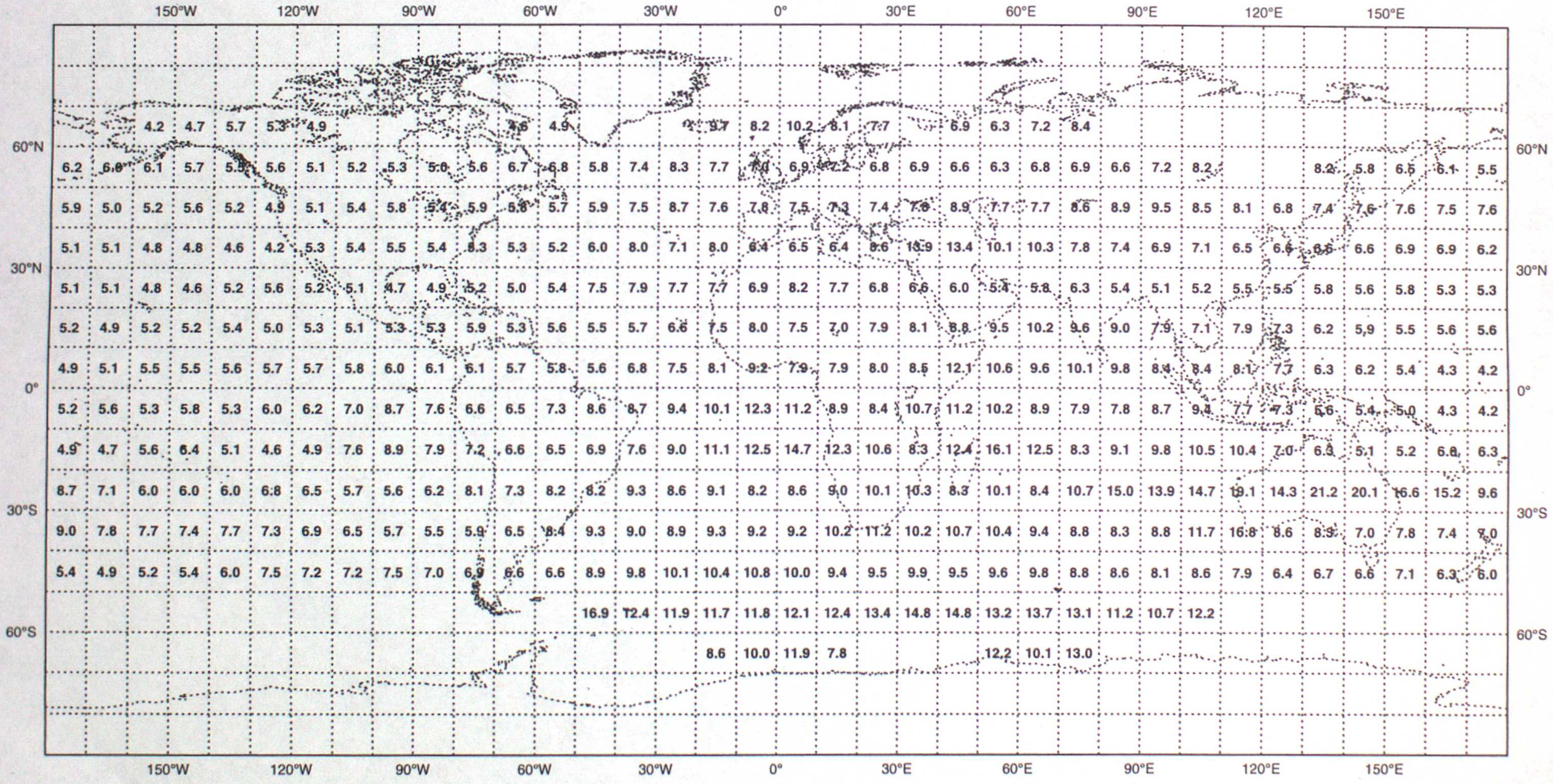

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-1.1 -1.3 -1.5 -1.9 -2.0 0.0 0.0 -4.1 1.3 -1.3 -1.5 -0.2 -2.2 -2.0 -1.2 -1.9
-0.2 0.1 -0.5 -1.2 -1.5 -2.2 -1.6 -1.0 -0.8 -1.0 -1.8 -0.8 -0.4 -0.6 -0.9 -0.6 -0.2 -0.5 -0.6 -1.1 -0.2 0.3 0.4 -0.7 -0.8 -0.9 -0.9 -1.0 -3.5 -2.4 -1.4 -1.5 -1.5 -1.6
-0.2 0.4 0.7 -0.2 -0.3 -0.5 -1.4 -1.6 -0.7 0.0 -0.4 -0.2 0.1 0.1 -0.5 -1.2 -1.1 -2.2 -1.6 -1.6 -1.6 -1.6 -2.7 -1.7 -2.1 -3.9 -3.4 -3.3 -3.5 -3.1 -0.3 -0.1 0.1 0.0 -0.3 0.2
0.3 0.0 0.3 0.2 0.6 0.8 -0.9 -0.6 0.6 0.3 -0.4 -0.1 0.2 -0.4 0.6 -0.2 -1.0 -0.1 -0.2 -0.1 -3.7 -8.0 -7.5 -4.0 -2.2 -2.7 -2.6 -1.6 -1.5 -0.7 0.2 0.8 1.2 1.7 0.8 0.2
0.1 -0.3 0.2 1.5 1.3 1.3 0.6 -0.1 0.7 0.3 0.1 0.8 0.6 -0.2 -0.2 0.6 0.7 1.0 1.0 0.7 1.8 2.2 0.6 0.7 0.7 1.0 1.1 0.7 1.0 1.4 1.3 1.6 1.3 1.7 0.8 0.4
1.6 1.2 1.3 1.6 1.2 1.0 0.7 1.0 0.6 0.9 1.4 1.4 1.4 0.7 0.2 1.6 2.1 2.5 1.4 0.4 0.6 2.2 3.0 2.4 3.6 3.7 2.9 2.6 1.9 2.5 1.8 1.6 0.8 0.9 1.9 1.5
0.8 0.9 1.0 0.8 0.9 1.3 1.1 0.9 0.8 0.9 0.7 0.0 0.5 0.3 -0.7 0.2 1.2 -2.4 0.7 0.1 -0.5 -0.9 2.1 0.7 2.7 4.0 4.3 3.5 1.7 1.5 1.0 1.3 1.4 1.2 0.1 0.0
1.3 1.5 1.6 1.4 0.6 1.1 2.2 1.3 2.1 0.5 -0.1 0.0 0.3 0.8 1.6 2.0 1.7 1.2 2.4 2.5 1.4 3.3 3.9 1.2 1.7 2.2 2.2 2.0 2.5 1.0 -1.1 1.6 0.7 1.3 0.6 0.4
-0.1 0.7 1.6 1.6 -1.3 -0.1 0.1 0.7 -0.4 1.1 -1.4 -0.2 0.3 0.9 1.3 1.9 4.8 4.2 3.5 1.9 1.3 1.3 2.8 5.4 4.5 2.3 1.4 1.3 3.1 3.4 0.8 -0.1 0.3 -0.1 -1.6 -1.9
-0.8 0.4 0.2 0.1 0.1 0.1 0.0 0.0 -0.4 0.6 -2.0 0.2 -0.9 -0.9 -0.9 -0.8 -0.7 0.7 1.1 0.8 -0.6 1.3 0.7 -0.4 1.4 0.3 -4.8 -1.8 -2.6 -3.9 -7.4 -15.0 -15.5 -11.0 -7.2 -3.8
-2.1 0.4 0.5 0.3 0.2 0.4 0.4 0.2 0.1 0.3 -0.6 -0.1 0.9 -1.4 -1.3 -1.1 -1.6 -1.5 -1.3 -1.5 -2.4 -2.0 -2.5 -2.8 -1.7 -1.0 -1.3 -2.1 -3.5 -7.9 -3.4 -2.0 -1.3 -1.8 -1.4 -0.8
-1.0 -0.8 -1.4 -1.4 -1.6 0.0 -0.3 -0.2 0.3 0.4 -1.4 -1.5 -0.8 -1.5 -1.1 -1.6 -2.6 -2.8 -2.5 -2.2 -2.4 -2.5 -2.2 -1.7 -1.6 -1.7 -1.8 -1.2 -2.1 -2.6 -1.4 -1.5 -2.0 -1.8 -2.1 -1.4
-6.8 -3.1 -3.5 -3.5 -3.3 -3.1 -3.8 -5.2 -6.2 -6.0 -4.1 -4.4 -4.0 -2.9 -3.2 -4.8
-3.1 -1.4 -5.2 -2.3 -1.6 -4.5 -7.8

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). AUGUST 2004
All observations
Values are plotted where greater than 10 obs are present


150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
4.2 4.7 5.7 5.3 4.9 4.6 4.9 9.7 8.2 10.2 8.1 7.7 6.9 6.3 7.2 8.4
6.2 6.0 6.1 5.7 5.5 5.6 5.1 5.2 5.3 5.0 5.6 6.7 6.8 5.8 7.4 8.3 7.7 7.0 6.9 7.2 6.8 6.9 6.6 6.3 6.8 6.9 6.6 7.2 8.2 8.2 5.8 6.5 6.1 5.5
5.9 5.0 5.2 5.6 5.2 4.9 5.1 5.4 5.8 5.4 5.9 5.8 5.7 5.9 7.5 8.7 7.6 7.8 7.5 7.3 7.4 7.6 8.9 7.7 7.7 8.6 8.9 9.5 8.5 8.1 6.8 7.4 7.6 7.6 7.5 7.6
5.1 5.1 4.8 4.8 4.6 4.2 5.3 5.4 5.5 5.4 8.3 5.3 5.2 6.0 8.0 7.1 8.0 6.4 6.5 6.4 8.6 13.9 13.4 10.1 10.3 7.8 7.4 6.9 7.1 6.5 6.6 6.6 6.6 6.9 6.9 6.2
5.1 5.1 4.8 4.6 5.2 5.6 5.2 5.1 4.7 4.9 5.2 5.0 5.4 7.5 7.9 7.7 7.7 6.9 8.2 7.7 6.8 6.6 6.0 5.4 5.8 6.3 5.4 5.1 5.2 5.5 5.5 5.8 5.6 5.8 5.3 5.3
5.2 4.9 5.2 5.2 5.4 5.0 5.3 5.1 5.3 5.3 5.9 5.3 5.6 5.5 5.7 6.6 7.5 8.0 7.5 7.0 7.9 8.1 8.8 9.5 10.2 9.6 9.0 7.9 7.1 7.9 7.3 6.2 5.9 5.5 5.6 5.6
4.9 5.1 5.5 5.5 5.6 5.7 5.7 5.8 6.0 6.1 6.1 5.7 5.8 5.6 6.8 7.5 8.1 9.2 7.9 7.9 8.0 8.5 12.1 10.6 9.6 10.1 9.8 8.4 8.4 8.1 7.7 6.3 6.2 5.4 4.3 4.2
5.2 5.6 5.3 5.8 5.3 6.0 6.2 7.0 8.7 7.6 6.6 6.5 7.3 8.6 8.7 9.4 10.1 12.3 11.2 8.9 8.4 10.7 11.2 10.2 8.9 7.9 7.8 8.7 9.4 7.7 7.3 5.6 5.4 5.0 4.3 4.2
4.9 4.7 5.6 6.4 5.1 4.6 4.9 7.6 8.9 7.9 7.2 6.6 6.5 6.9 7.6 9.0 11.1 12.5 14.7 12.3 10.6 8.3 12.4 16.1 12.5 8.3 9.1 9.8 10.5 10.4 7.0 6.3 5.1 5.2 6.8 6.3
8.7 7.1 6.0 6.0 6.0 6.8 6.5 5.7 5.6 6.2 8.1 7.3 8.2 8.2 9.3 8.6 9.1 8.2 8.6 9.0 10.1 10.3 8.3 10.1 8.4 10.7 15.0 13.9 14.7 19.1 14.3 21.2 20.1 16.6 15.2 9.6
9.0 7.8 7.7 7.4 7.7 7.3 6.9 6.5 5.7 5.5 5.9 6.5 8.4 9.3 9.0 8.9 9.3 9.2 9.2 10.2 11.2 10.2 10.7 10.4 9.4 8.8 8.3 8.8 11.7 16.8 8.6 8.3 7.0 7.8 7.4 7.0
5.4 4.9 5.2 5.4 6.0 7.5 7.2 7.2 7.5 7.0 6.9 6.6 6.6 8.9 9.8 10.1 10.4 10.8 10.0 9.4 9.5 9.9 9.5 9.6 9.8 8.8 8.6 8.1 8.6 7.9 6.4 6.7 6.6 7.1 6.3 6.0
16.9 12.4 11.9 11.7 11.8 12.1 12.4 13.4 14.8 14.8 13.2 13.7 13.1 11.2 10.7 12.2
8.6 10.0 11.9 7.8 12.2 10.1 13.0

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: EXETER

MONTH: Aug 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15, NOAA-16 and NOAA-17.

Standard of comparison :Background field from UKMO global model.

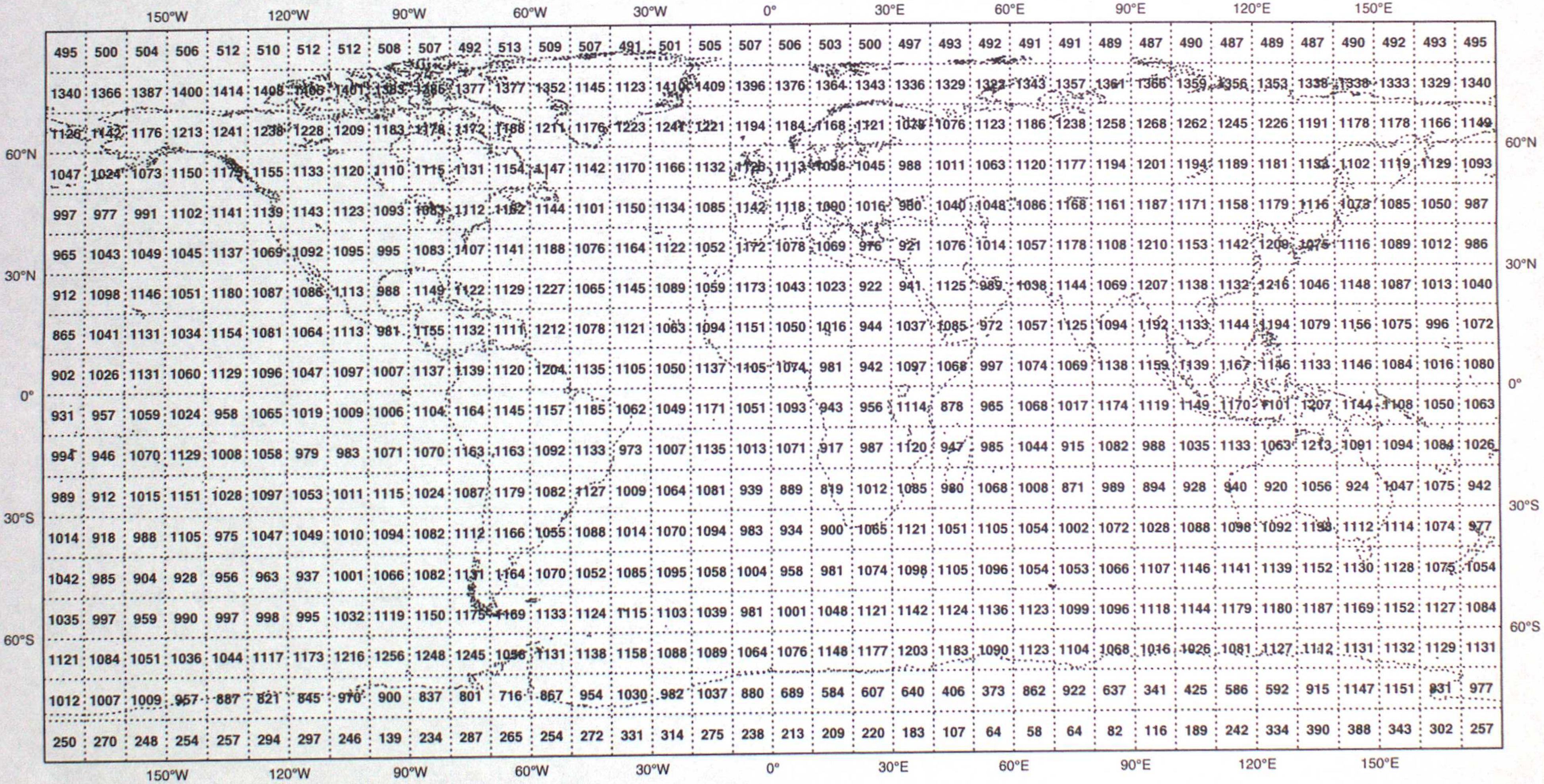
Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

- HIRS8 (Surface)
- HIRS15 (700)
- HIRS11 (500-700)
- HIRS4 (400)
- AMSUA5 (700)
- AMSUA7 (300)
- AMSUA9 (100)

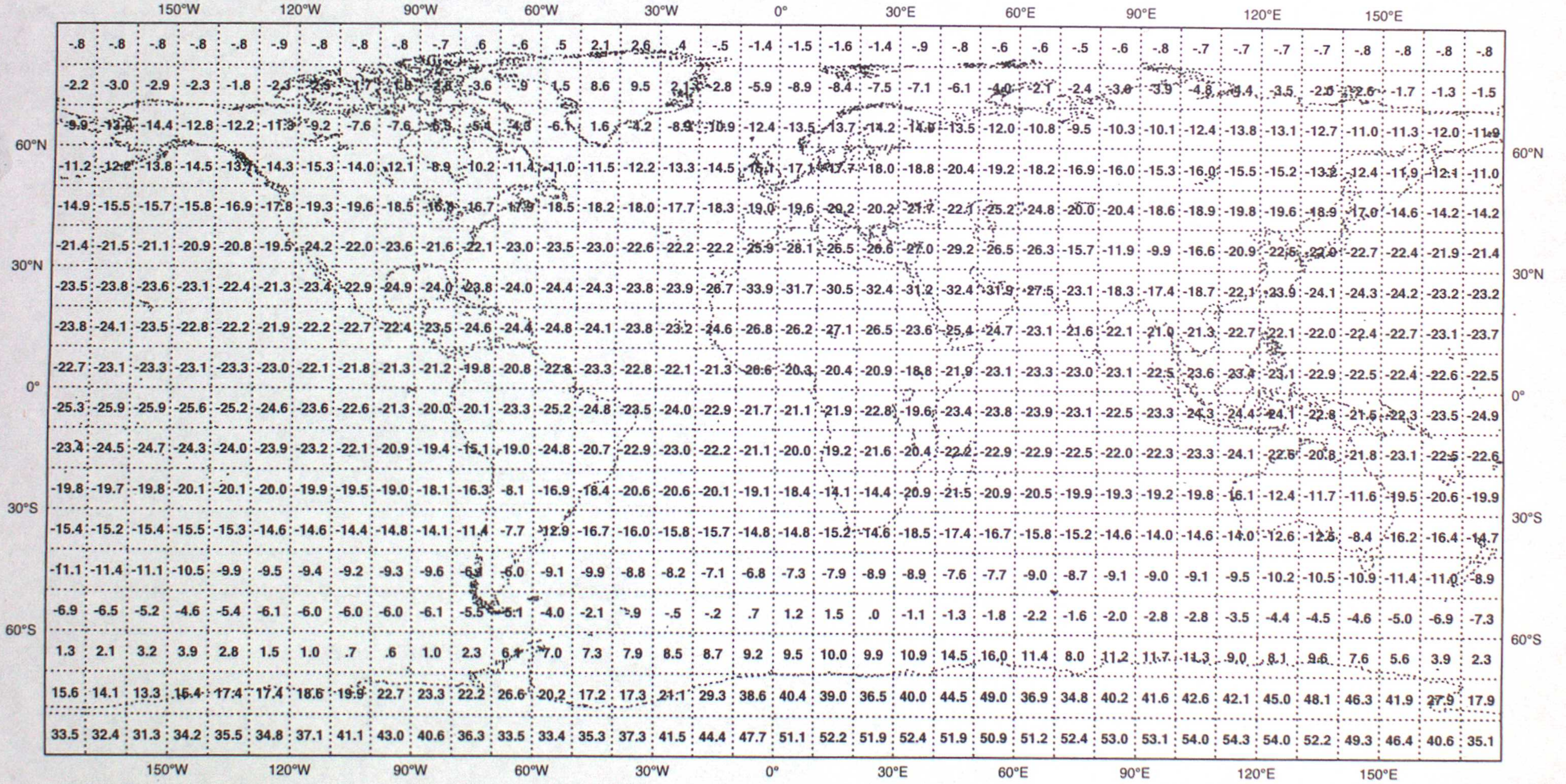
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. AUGUST 2004
NOAA15, using all observations
Global average number of observations in 24 hours = 651869



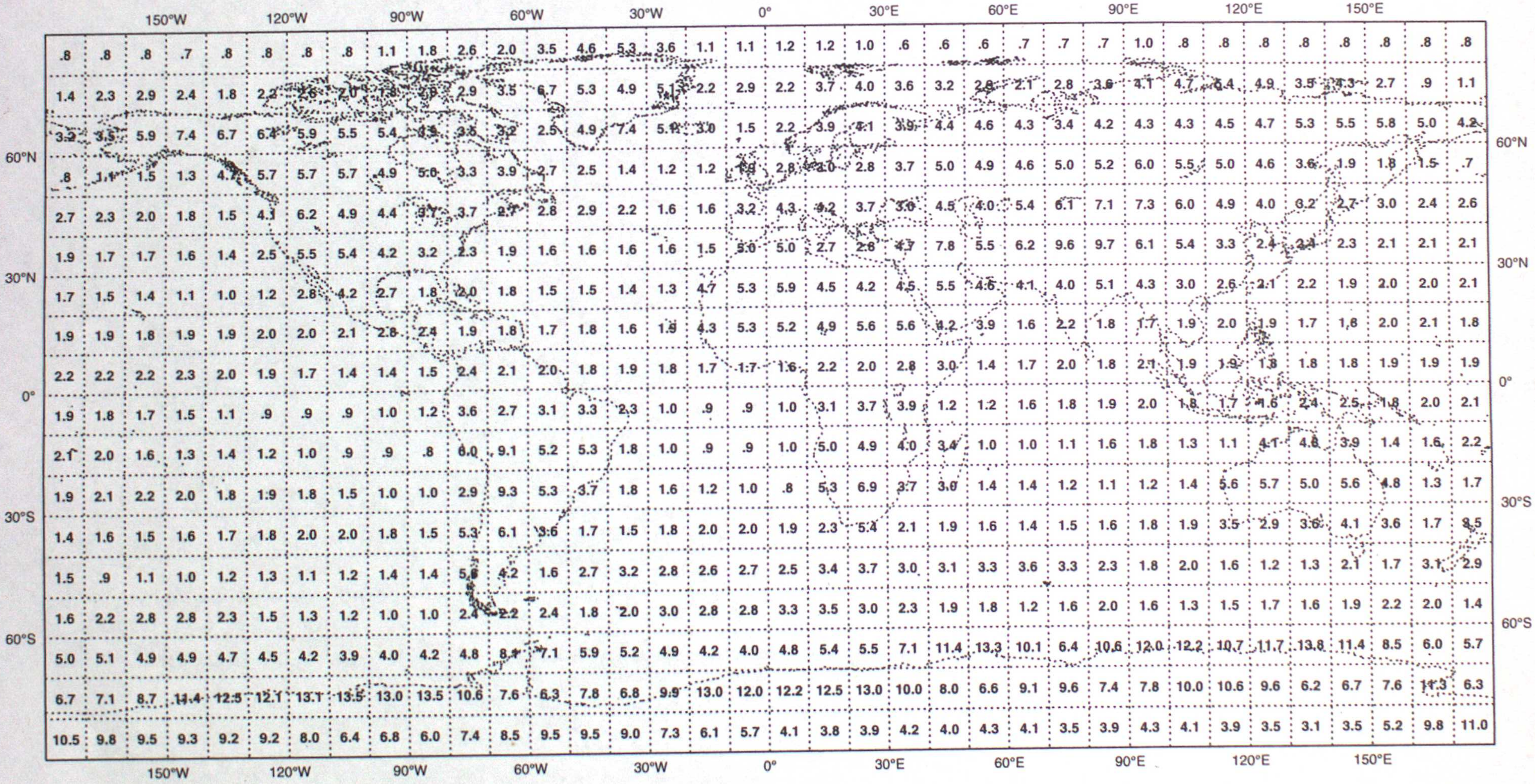
495	500	504	506	512	510	512	512	508	507	492	513	509	507	491	501	505	507	506	503	500	497	493	492	491	491	489	487	490	487	489	487	490	492	493	495
1340	1366	1387	1400	1414	1408	1406	1401	1383	1386	1377	1377	1352	1145	1123	1410	1409	1396	1376	1364	1343	1336	1329	1322	1343	1357	1361	1366	1359	1356	1353	1338	1338	1333	1329	1340
1126	1142	1176	1213	1241	1238	1228	1209	1183	1178	1172	1188	1211	1176	1223	1241	1221	1194	1184	1168	1121	1028	1076	1123	1186	1238	1258	1268	1262	1245	1226	1191	1178	1178	1166	1149
1047	1024	1073	1150	1175	1155	1133	1120	1110	1115	1131	1154	1147	1142	1170	1166	1132	1125	1113	1098	1045	988	1011	1063	1120	1177	1194	1201	1194	1189	1181	1133	1102	1119	1129	1093
997	977	991	1102	1141	1139	1143	1123	1093	1083	1112	1182	1144	1101	1150	1134	1085	1142	1118	1090	1016	980	1040	1048	1086	1168	1161	1187	1171	1158	1179	1116	1073	1085	1050	987
965	1043	1049	1045	1137	1069	1092	1095	995	1083	1107	1141	1188	1076	1164	1122	1052	1172	1078	1069	976	921	1076	1014	1057	1178	1108	1210	1153	1142	1209	1075	1116	1089	1012	986
912	1098	1146	1051	1180	1087	1086	1113	988	1149	1122	1129	1227	1065	1145	1089	1059	1173	1043	1023	922	941	1125	989	1038	1144	1069	1207	1138	1132	1216	1046	1148	1087	1013	1040
865	1041	1131	1034	1154	1081	1064	1113	981	1155	1132	1111	1212	1078	1121	1063	1094	1151	1050	1016	944	1037	1085	972	1057	1125	1094	1192	1133	1144	1194	1079	1156	1075	996	1072
902	1026	1131	1060	1129	1096	1047	1097	1007	1137	1139	1120	1204	1135	1105	1050	1137	1105	1074	981	942	1097	1068	997	1074	1069	1138	1159	1139	1167	1146	1133	1146	1084	1016	1080
931	957	1059	1024	958	1065	1019	1009	1006	1104	1164	1145	1157	1185	1062	1049	1171	1051	1093	943	956	1114	878	965	1068	1017	1174	1119	1149	1170	1101	1207	1144	1108	1050	1063
994	946	1070	1129	1008	1058	979	983	1071	1070	1163	1163	1092	1133	973	1007	1135	1013	1071	917	987	1120	947	985	1044	915	1082	988	1035	1133	1063	1213	1091	1094	1084	1026
989	912	1015	1151	1028	1097	1053	1011	1115	1024	1087	1179	1082	1127	1009	1064	1081	939	889	819	1012	1085	980	1068	1008	871	989	894	928	940	920	1056	924	1047	1075	942
1014	918	988	1105	975	1047	1049	1010	1094	1082	1112	1166	1055	1088	1014	1070	1094	983	934	900	1065	1121	1051	1105	1054	1002	1072	1028	1088	1098	1092	1198	1112	1114	1074	977
1042	985	904	928	956	963	937	1001	1066	1082	1131	1164	1070	1052	1085	1095	1058	1004	958	981	1074	1098	1105	1096	1054	1053	1066	1107	1146	1141	1139	1152	1130	1128	1075	1054
1035	997	959	990	997	998	995	1032	1119	1150	1175	1169	1133	1124	1115	1103	1039	981	1001	1048	1121	1142	1124	1136	1123	1099	1096	1118	1144	1179	1180	1187	1169	1152	1127	1084
1121	1084	1051	1036	1044	1117	1173	1216	1256	1248	1245	1056	1131	1138	1158	1088	1089	1064	1076	1148	1177	1203	1183	1090	1123	1104	1068	1016	1026	1081	1127	1112	1131	1132	1129	1131
1012	1007	1009	957	887	821	845	970	900	837	801	716	867	954	1030	982	1037	880	689	584	607	640	406	373	862	922	637	341	425	586	592	915	1147	1151	831	977
250	270	248	254	257	294	297	246	139	234	287	265	254	272	331	314	275	238	213	209	220	183	107	64	58	64	82	116	189	242	334	390	388	343	302	257

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS8 (Surface)
NOAA15, using all observations



-.8	-.8	-.8	-.8	-.8	-.9	-.8	-.8	-.8	-.7	.6	-.6	.5	2.1	2.6	.4	-.5	-1.4	-1.5	-1.6	-1.4	-.9	-.8	-.6	-.6	-.5	-.6	-.8	-.7	-.7	-.7	-.7	-.8	-.8	-.8	-.8
-2.2	-3.0	-2.9	-2.3	-1.8	-2.3	-2.5	-1.7	1.8	-1.8	-3.6	-.9	1.5	8.6	9.5	2.1	-2.8	-5.9	-8.9	-8.4	-7.5	-7.1	-6.1	-4.0	-2.1	-2.4	-3.0	-3.9	-4.8	-4.4	-3.5	-2.0	-2.6	-1.7	-1.3	-1.5
-9.9	-13.0	-14.4	-12.8	-12.2	-11.3	-9.2	-7.6	-7.6	-6.9	-5.4	-4.0	-6.1	1.6	-4.2	-8.9	-10.9	-12.4	-13.5	-13.7	-14.2	-14.0	-13.5	-12.0	-10.8	-9.5	-10.3	-10.1	-12.4	-13.8	-13.1	-12.7	-11.0	-11.3	-12.0	-11.9
-11.2	-12.2	-13.8	-14.5	-13.7	-14.3	-15.3	-14.0	-12.1	-8.9	-10.2	-11.4	-11.0	-11.5	-12.2	-13.3	-14.5	-16.1	-17.1	-17.7	-18.0	-18.8	-20.4	-19.2	-18.2	-16.9	-16.0	-15.3	-16.0	-15.5	-15.2	-13.2	-12.4	-11.9	-12.1	-11.0
-14.9	-15.5	-15.7	-15.8	-16.9	-17.8	-19.3	-19.6	-18.5	-16.8	-16.7	-17.9	-18.5	-18.2	-18.0	-17.7	-18.3	-19.0	-19.6	-20.2	-20.2	-21.7	-22.1	-25.2	-24.8	-20.0	-20.4	-18.6	-18.9	-19.8	-19.6	-18.9	-17.0	-14.6	-14.2	-14.2
-21.4	-21.5	-21.1	-20.9	-20.8	-19.5	-24.2	-22.0	-23.6	-21.6	-22.1	-23.0	-23.5	-23.0	-22.6	-22.2	-22.2	-25.9	-28.1	-26.5	-26.6	-27.0	-29.2	-26.5	-26.3	-15.7	-11.9	-9.9	-16.6	-20.9	-22.5	-22.0	-22.7	-22.4	-21.9	-21.4
-23.5	-23.8	-23.6	-23.1	-22.4	-21.3	-23.4	-22.9	-24.9	-24.0	-23.8	-24.0	-24.4	-24.3	-23.8	-23.9	-26.7	-33.9	-31.7	-30.5	-32.4	-31.2	-32.4	-31.9	-27.5	-23.1	-18.3	-17.4	-18.7	-22.1	-23.9	-24.1	-24.3	-24.2	-23.2	-23.2
-23.8	-24.1	-23.5	-22.8	-22.2	-21.9	-22.2	-22.7	-22.4	-23.5	-24.6	-24.4	-24.8	-24.1	-23.8	-23.2	-24.6	-26.8	-26.2	-27.1	-26.5	-23.6	-25.4	-24.7	-23.1	-21.6	-22.1	-21.0	-21.3	-22.7	-22.1	-22.0	-22.4	-22.7	-23.1	-23.7
-22.7	-23.1	-23.3	-23.1	-23.3	-23.0	-22.1	-21.8	-21.3	-21.2	-19.8	-20.8	-22.8	-23.3	-22.8	-22.1	-21.3	-20.6	-20.3	-20.4	-20.9	-18.8	-21.9	-23.1	-23.3	-23.0	-23.1	-22.5	-23.6	-23.4	-23.1	-22.9	-22.5	-22.4	-22.6	-22.5
-25.3	-25.9	-25.9	-25.6	-25.2	-24.6	-23.6	-22.6	-21.3	-20.0	-20.1	-23.3	-25.2	-24.8	-23.5	-24.0	-22.9	-21.7	-21.1	-21.9	-22.8	-19.6	-23.4	-23.8	-23.9	-23.1	-22.5	-23.3	-24.3	-24.4	-24.1	-22.8	-21.5	-22.3	-23.5	-24.9
-23.4	-24.5	-24.7	-24.3	-24.0	-23.9	-23.2	-22.1	-20.9	-19.4	-15.1	-19.0	-24.8	-20.7	-22.9	-23.0	-22.2	-21.1	-20.0	-19.2	-21.6	-20.4	-22.2	-22.9	-22.9	-22.5	-22.0	-22.3	-23.3	-24.1	-22.6	-20.8	-21.8	-23.1	-22.5	-22.6
-19.8	-19.7	-19.8	-20.1	-20.1	-20.0	-19.9	-19.5	-19.0	-18.1	-16.3	-8.1	-16.9	-18.4	-20.6	-20.6	-20.1	-19.1	-18.4	-14.1	-14.4	-20.9	-21.5	-20.9	-20.5	-19.9	-19.3	-19.2	-19.8	-16.1	-12.4	-11.7	-11.6	-19.5	-20.6	-19.9
-15.4	-15.2	-15.4	-15.5	-15.3	-14.6	-14.6	-14.4	-14.8	-14.1	-11.4	-7.7	-12.9	-16.7	-16.0	-15.8	-15.7	-14.8	-14.8	-15.2	-14.6	-18.5	-17.4	-16.7	-15.8	-15.2	-14.6	-14.0	-14.6	-14.0	-12.6	-12.6	-8.4	-16.2	-16.4	-14.7
-11.1	-11.4	-11.1	-10.5	-9.9	-9.5	-9.4	-9.2	-9.3	-9.6	-6.9	-6.0	-9.1	-9.9	-8.8	-8.2	-7.1	-6.8	-7.3	-7.9	-8.9	-8.9	-7.6	-7.7	-9.0	-8.7	-9.1	-9.0	-9.1	-9.5	-10.2	-10.5	-10.9	-11.4	-11.0	-8.9
-6.9	-6.5	-5.2	-4.6	-5.4	-6.1	-6.0	-6.0	-6.0	-6.1	-5.5	-5.1	-4.0	-2.1	-.9	-.5	-.2	.7	1.2	1.5	.0	-1.1	-1.3	-1.8	-2.2	-1.6	-2.0	-2.8	-2.8	-3.5	-4.4	-4.5	-4.6	-5.0	-6.9	-7.3
1.3	2.1	3.2	3.9	2.8	1.5	1.0	.7	.6	1.0	2.3	6.1	7.0	7.3	7.9	8.5	8.7	9.2	9.5	10.0	9.9	10.9	14.5	16.0	11.4	8.0	11.2	11.7	11.3	9.0	8.1	9.6	7.6	5.6	3.9	2.3
15.6	14.1	13.3	15.4	17.4	17.4	18.6	19.9	22.7	23.3	22.2	26.6	20.2	17.2	17.3	21.1	29.3	38.6	40.4	39.0	36.5	40.0	44.5	49.0	36.9	34.8	40.2	41.6	42.6	42.1	45.0	48.1	46.3	41.9	27.9	17.9
33.5	32.4	31.3	34.2	35.5	34.8	37.1	41.1	43.0	40.6	36.3	33.5	33.4	35.3	37.3	41.5	44.4	47.7	51.1	52.2	51.9	52.4	51.9	50.9	51.2	52.4	53.0	53.1	54.0	54.3	54.0	52.2	49.3	46.4	40.6	35.1

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS8 (Surface)
NOAA15, using all observations



.8	.8	.8	.7	.8	.8	.8	.8	1.1	1.8	2.6	2.0	3.5	4.6	5.3	3.6	1.1	1.1	1.2	1.2	1.0	.6	.6	.6	.7	.7	.7	1.0	.8	.8	.8	.8	.8	.8	.8	.8
1.4	2.3	2.9	2.4	1.8	2.2	2.6	2.0	1.8	2.9	2.9	3.5	6.7	5.3	4.9	5.1	2.2	2.9	2.2	3.7	4.0	3.6	3.2	2.8	2.1	2.8	3.6	4.1	4.7	6.4	4.9	3.5	4.3	2.7	.9	1.1
3.2	3.5	5.9	7.4	6.7	6.4	5.9	5.5	5.4	3.9	3.5	3.2	2.5	4.9	7.4	5.1	3.0	1.5	2.2	3.9	4.1	3.9	4.4	4.6	4.3	3.4	4.2	4.3	4.3	4.5	4.7	5.3	5.5	5.8	5.0	4.2
.8	1.1	1.5	1.3	4.7	5.7	5.7	5.7	4.9	5.0	3.3	3.9	2.7	2.5	1.4	1.2	1.2	1.9	2.8	2.0	2.8	3.7	5.0	4.9	4.6	5.0	5.2	6.0	5.5	5.0	4.6	3.6	1.9	1.8	1.5	.7
2.7	2.3	2.0	1.8	1.5	4.1	6.2	4.9	4.4	3.7	3.7	2.7	2.8	2.9	2.2	1.6	1.6	3.2	4.3	4.2	3.7	3.0	4.5	4.0	5.4	6.1	7.1	7.3	6.0	4.9	4.0	6.2	2.7	3.0	2.4	2.6
1.9	1.7	1.7	1.6	1.4	2.5	5.5	5.4	4.2	3.2	2.3	1.9	1.6	1.6	1.6	1.6	1.5	5.0	5.0	2.7	2.8	4.7	7.8	5.5	6.2	9.6	9.7	6.1	5.4	3.3	2.4	2.4	2.3	2.1	2.1	2.1
1.7	1.5	1.4	1.1	1.0	1.2	2.8	4.2	2.7	1.8	2.0	1.8	1.5	1.5	1.4	1.3	4.7	5.3	5.9	4.5	4.2	4.5	5.5	4.6	4.1	4.0	5.1	4.3	3.0	2.6	2.1	2.2	1.9	2.0	2.0	2.1
1.9	1.9	1.8	1.9	1.9	2.0	2.0	2.1	2.8	2.4	1.9	1.8	1.7	1.8	1.6	1.9	4.3	5.3	5.2	4.9	5.6	5.6	4.2	3.9	1.6	2.2	1.8	1.7	1.9	2.0	1.9	1.7	1.8	2.0	2.1	1.8
2.2	2.2	2.2	2.3	2.0	1.9	1.7	1.4	1.4	1.5	2.4	2.1	2.0	1.8	1.9	1.8	1.7	1.7	1.6	2.2	2.0	2.8	3.0	1.4	1.7	2.0	1.8	2.1	1.9	1.9	1.8	1.8	1.8	1.9	1.9	1.9
1.9	1.8	1.7	1.5	1.1	.9	.9	.9	1.0	1.2	3.6	2.7	3.1	3.3	2.3	1.0	.9	.9	1.0	3.1	3.7	3.9	1.2	1.2	1.6	1.8	1.9	2.0	1.8	1.7	1.6	2.4	2.5	1.8	2.0	2.1
2.1	2.0	1.6	1.3	1.4	1.2	1.0	.9	.9	.8	6.0	9.1	5.2	5.3	1.8	1.0	.9	.9	1.0	5.0	4.9	4.0	3.4	1.0	1.0	1.1	1.6	1.8	1.3	1.1	4.1	4.8	3.9	1.4	1.6	2.2
1.9	2.1	2.2	2.0	1.8	1.9	1.8	1.5	1.0	1.0	2.9	9.3	5.3	3.7	1.8	1.6	1.2	1.0	.8	5.3	6.9	3.7	3.0	1.4	1.4	1.2	1.1	1.2	1.4	5.6	5.7	5.0	5.6	4.8	1.3	1.7
1.4	1.6	1.5	1.6	1.7	1.8	2.0	2.0	1.8	1.5	5.3	6.1	3.6	1.7	1.5	1.8	2.0	2.0	1.9	2.3	5.4	2.1	1.9	1.6	1.4	1.5	1.6	1.8	1.9	3.5	2.9	3.6	4.1	3.6	1.7	8.5
1.5	.9	1.1	1.0	1.2	1.3	1.1	1.2	1.4	1.4	5.6	4.2	1.6	2.7	3.2	2.8	2.6	2.7	2.5	3.4	3.7	3.0	3.1	3.3	3.6	3.3	2.3	1.8	2.0	1.6	1.2	1.3	2.1	1.7	3.1	2.9
1.6	2.2	2.8	2.8	2.3	1.5	1.3	1.2	1.0	1.0	2.4	2.2	2.4	1.8	2.0	3.0	2.8	2.8	3.3	3.5	3.0	2.3	1.9	1.8	1.2	1.6	2.0	1.6	1.3	1.5	1.7	1.6	1.9	2.2	2.0	1.4
5.0	5.1	4.9	4.9	4.7	4.5	4.2	3.9	4.0	4.2	4.8	8.1	7.1	5.9	5.2	4.9	4.2	4.0	4.8	5.4	5.5	7.1	11.4	13.3	10.1	6.4	10.6	12.0	12.2	10.7	11.7	13.8	11.4	8.5	6.0	5.7
6.7	7.1	8.7	14.4	12.5	12.1	13.1	13.5	13.0	13.5	10.6	7.6	6.3	7.8	6.8	9.9	13.0	12.0	12.2	12.5	13.0	10.0	8.0	6.6	9.1	9.6	7.4	7.8	10.0	10.6	9.6	6.2	6.7	7.6	11.3	6.3
10.5	9.8	9.5	9.3	9.2	9.2	8.0	6.4	6.8	6.0	7.4	8.5	9.5	9.5	9.0	7.3	6.1	5.7	4.1	3.8	3.9	4.2	4.0	4.3	4.1	3.5	3.9	4.3	4.1	3.9	3.5	3.1	3.5	5.2	9.8	11.0

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS15 (700 hPa)
NOAA15, using all observations

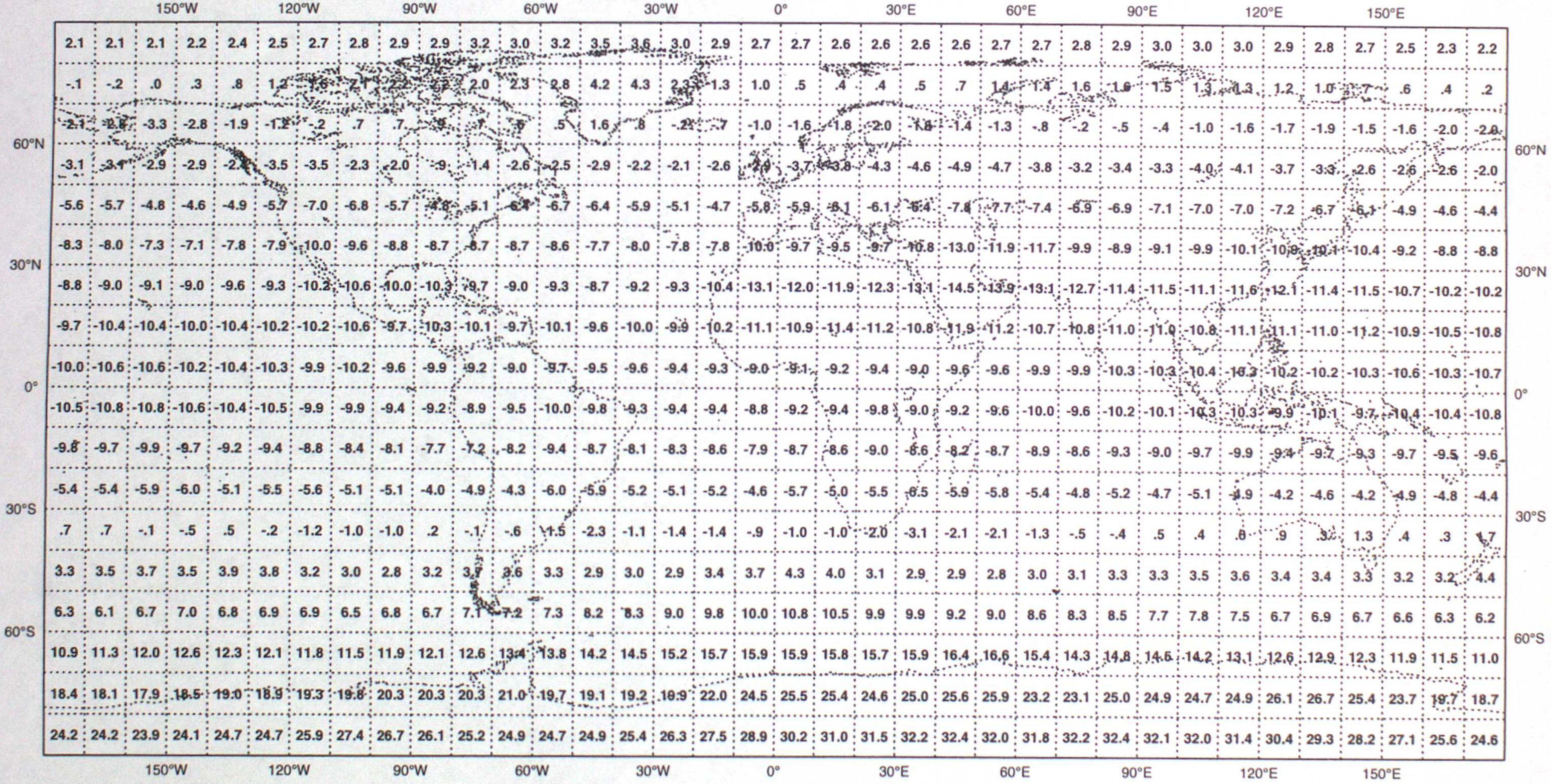
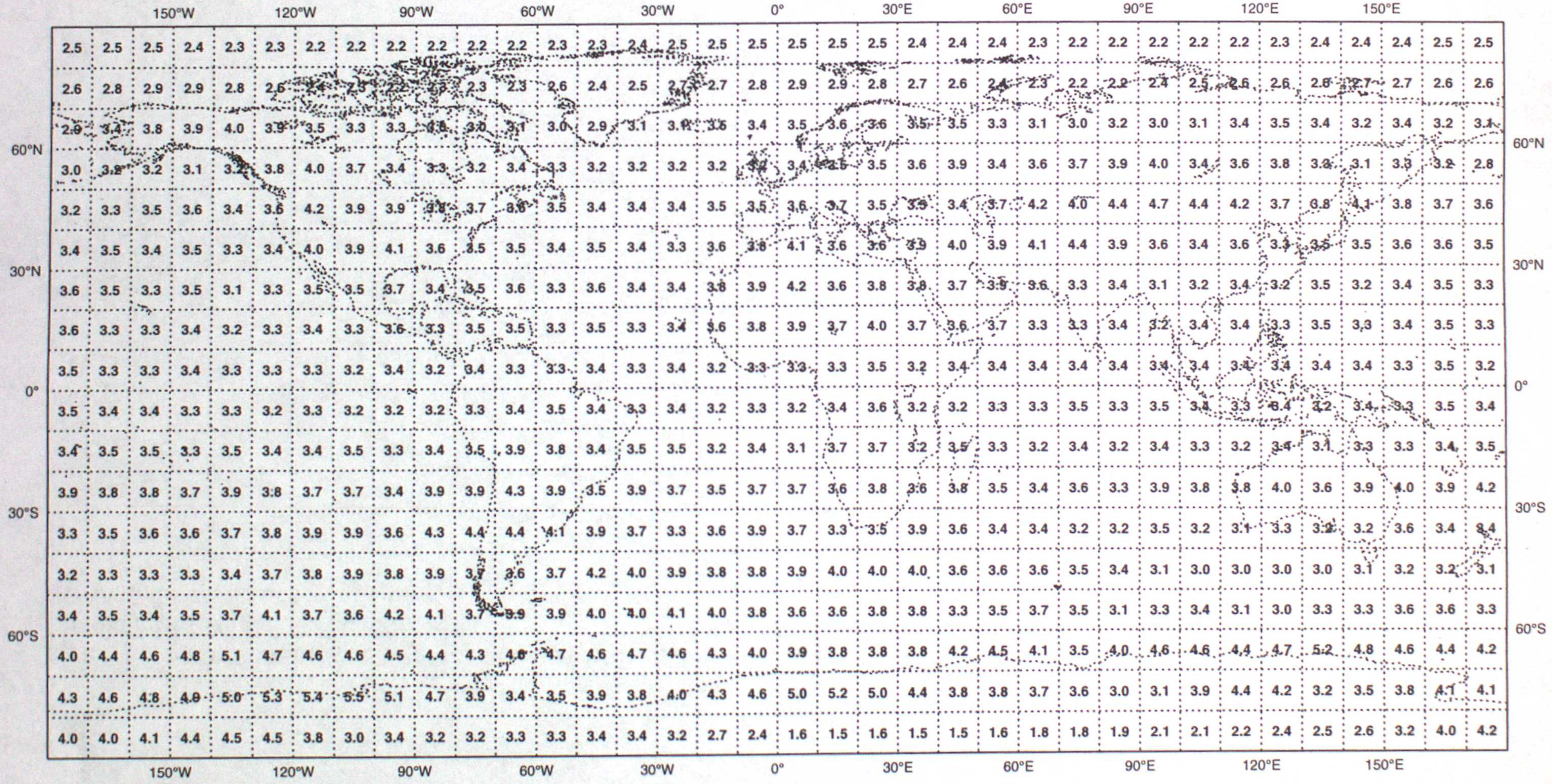
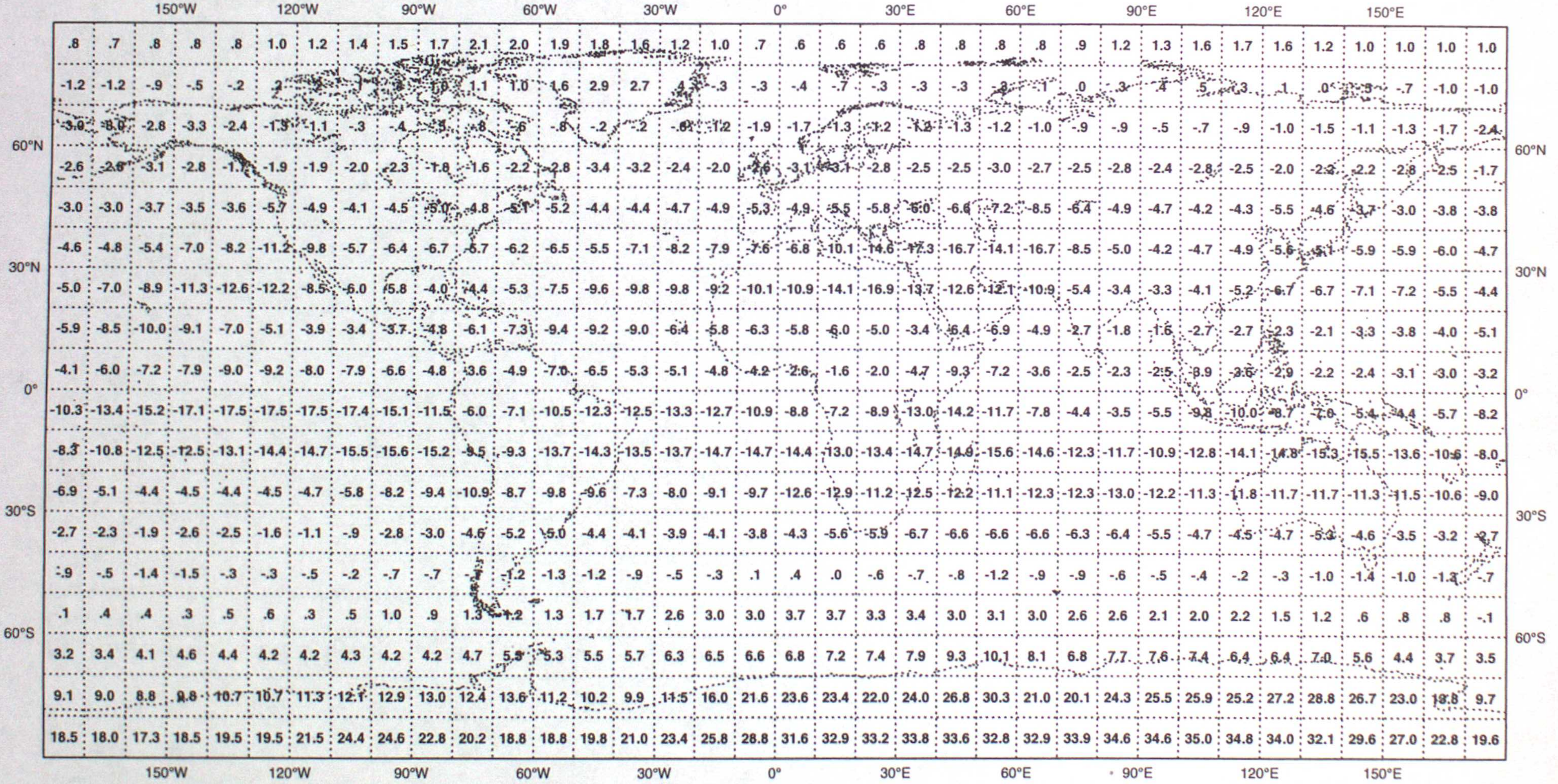

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
2.1 2.1 2.1 2.2 2.4 2.5 2.7 2.8 2.9 2.9 3.2 3.0 3.2 3.5 3.6 3.0 2.9 2.7 2.7 2.6 2.6 2.6 2.6 2.7 2.7 2.8 2.9 3.0 3.0 3.0 2.9 2.8 2.7 2.5 2.3 2.2
-.1 -.2 .0 .3 .8 1.2 1.6 2.1 2.2 2.2 2.0 2.3 2.8 4.2 4.3 2.3 1.3 1.0 .5 .4 .4 .5 .7 1.4 1.4 1.6 1.6 1.5 1.3 1.3 1.2 1.0 .7 .6 .4 .2
-2.1 -2.6 -3.3 -2.8 -1.9 -1.2 -.2 .7 .7 .9 .7 .5 .5 1.6 .8 -.2 -.7 -1.0 -1.6 -1.8 -2.0 -1.8 -1.4 -1.3 -.8 -.2 -.5 -.4 -1.0 -1.6 -1.7 -1.9 -1.5 -1.6 -2.0 -2.0
-3.1 -3.1 -2.9 -2.9 -2.2 -3.5 -3.5 -2.3 -2.0 -.9 -1.4 -2.6 -2.5 -2.9 -2.2 -2.1 -2.6 -2.9 -3.7 -3.8 -4.3 -4.6 -4.9 -4.7 -3.8 -3.2 -3.4 -3.3 -4.0 -4.1 -3.7 -3.3 -2.6 -2.6 -2.6 -2.0
-5.6 -5.7 -4.8 -4.6 -4.9 -5.7 -7.0 -6.8 -5.7 -4.8 -5.1 -6.4 -6.7 -6.4 -5.9 -5.1 -4.7 -5.8 -5.9 -6.1 -6.1 -6.4 -7.8 -7.7 -7.4 -6.9 -6.9 -7.1 -7.0 -7.0 -7.2 -6.7 -6.1 -4.9 -4.6 -4.4
-8.3 -8.0 -7.3 -7.1 -7.8 -7.9 -10.0 -9.6 -8.8 -8.7 -8.7 -8.7 -8.6 -7.7 -8.0 -7.8 -7.8 -10.0 -9.7 -9.5 -9.7 -10.8 -13.0 -11.9 -11.7 -9.9 -8.9 -9.1 -9.9 -10.1 -10.8 -10.1 -10.4 -9.2 -8.8 -8.8
-8.8 -9.0 -9.1 -9.0 -9.6 -9.3 -10.2 -10.6 -10.0 -10.3 -9.7 -9.0 -9.3 -8.7 -9.2 -9.3 -10.4 -13.1 -12.0 -11.9 -12.3 -13.1 -14.5 -13.9 -13.1 -12.7 -11.4 -11.5 -11.1 -11.6 -12.1 -11.4 -11.5 -10.7 -10.2 -10.2
-9.7 -10.4 -10.4 -10.0 -10.4 -10.2 -10.2 -10.6 -9.7 -10.3 -10.1 -9.7 -10.1 -9.6 -10.0 -9.9 -10.2 -11.1 -10.9 -11.4 -11.2 -10.8 -11.9 -11.2 -10.7 -10.8 -11.0 -11.0 -10.8 -11.1 -11.1 -11.0 -11.2 -10.9 -10.5 -10.8
-10.0 -10.6 -10.6 -10.2 -10.4 -10.3 -9.9 -10.2 -9.6 -9.9 -9.2 -9.0 -9.7 -9.5 -9.6 -9.4 -9.3 -9.0 -9.1 -9.2 -9.4 -9.0 -9.6 -9.6 -9.9 -9.9 -10.3 -10.3 -10.4 -10.3 -10.2 -10.2 -10.3 -10.6 -10.3 -10.7
-10.5 -10.8 -10.8 -10.6 -10.4 -10.5 -9.9 -9.9 -9.4 -9.2 -8.9 -9.5 -10.0 -9.8 -9.3 -9.4 -9.4 -8.8 -9.2 -9.4 -9.8 -9.0 -9.2 -9.6 -10.0 -9.6 -10.2 -10.1 -10.3 -10.3 -9.9 -10.1 -9.7 -10.4 -10.4 -10.8
-9.8 -9.7 -9.9 -9.7 -9.2 -9.4 -8.8 -8.4 -8.1 -7.7 -7.2 -8.2 -9.4 -8.7 -8.1 -8.3 -8.6 -7.9 -8.7 -8.6 -9.0 -8.6 -8.2 -8.7 -8.9 -8.6 -9.3 -9.0 -9.7 -9.9 -9.4 -9.7 -9.3 -9.7 -9.5 -9.6
-5.4 -5.4 -5.9 -6.0 -5.1 -5.5 -5.6 -5.1 -5.1 -4.0 -4.9 -4.3 -6.0 -5.9 -5.2 -5.1 -5.2 -4.6 -5.7 -5.0 -5.5 -6.5 -5.9 -5.8 -5.4 -4.8 -5.2 -4.7 -5.1 -4.9 -4.2 -4.6 -4.2 -4.9 -4.8 -4.4
.7 .7 -.1 -.5 .5 -.2 -1.2 -1.0 -1.0 .2 -.1 -.6 -1.5 -2.3 -1.1 -1.4 -1.4 -.9 -1.0 -1.0 -2.0 -3.1 -2.1 -2.1 -1.3 -.5 -.4 .5 .4 .8 .9 .3 1.3 .4 .3 1.7
3.3 3.5 3.7 3.5 3.9 3.8 3.2 3.0 2.8 3.2 3.7 3.6 3.3 2.9 3.0 2.9 3.4 3.7 4.3 4.0 3.1 2.9 2.9 2.8 3.0 3.1 3.3 3.3 3.5 3.6 3.4 3.4 3.3 3.2 3.2 4.4
6.3 6.1 6.7 7.0 6.8 6.9 6.9 6.5 6.8 6.7 7.1 7.2 7.3 8.2 8.3 9.0 9.8 10.0 10.8 10.5 9.9 9.9 9.2 9.0 8.6 8.3 8.5 7.7 7.8 7.5 6.7 6.9 6.7 6.6 6.3 6.2
10.9 11.3 12.0 12.6 12.3 12.1 11.8 11.5 11.9 12.1 12.6 13.4 13.8 14.2 14.5 15.2 15.7 15.9 15.9 15.8 15.7 15.9 16.4 16.6 15.4 14.3 14.8 14.6 14.2 13.1 12.6 12.9 12.3 11.9 11.5 11.0
18.4 18.1 17.9 18.5 19.0 18.9 19.3 19.8 20.3 20.3 20.3 21.0 19.7 19.1 19.2 18.9 22.0 24.5 25.5 25.4 24.6 25.0 25.6 25.9 23.2 23.1 25.0 24.9 24.7 24.9 26.1 26.7 25.4 23.7 19.7 18.7
24.2 24.2 23.9 24.1 24.7 24.7 25.9 27.4 26.7 26.1 25.2 24.9 24.7 24.9 25.4 26.3 27.5 28.9 30.2 31.0 31.5 32.2 32.4 32.0 31.8 32.2 32.4 32.1 32.0 31.4 30.4 29.3 28.2 27.1 25.6 24.6

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



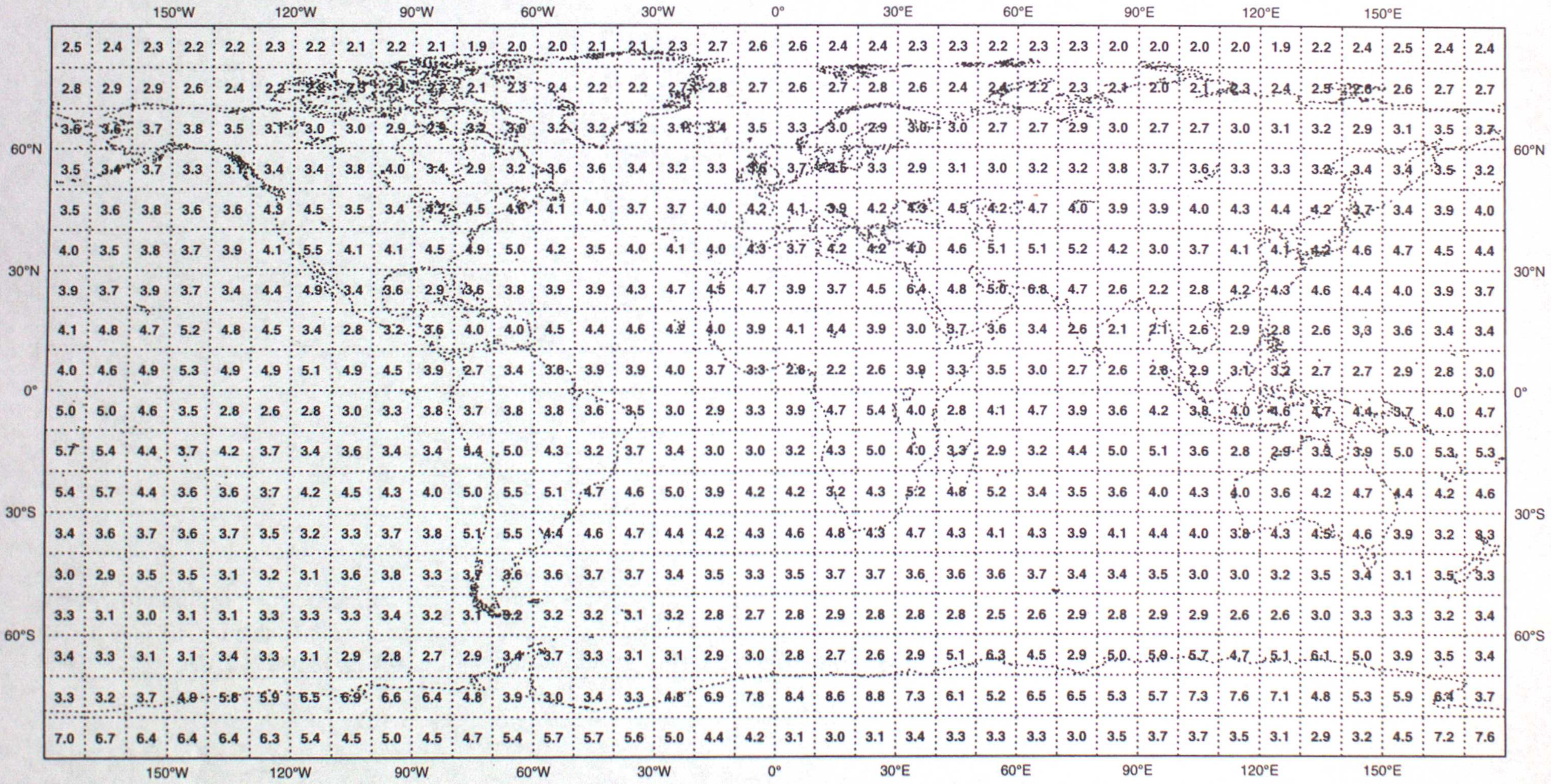
2.5	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.2	2.2	2.2	2.2	2.2	2.3	2.4	2.4	2.4	2.5	2.5
2.6	2.8	2.9	2.9	2.8	2.6	2.4	2.5	2.2	2.3	2.3	2.3	2.6	2.4	2.5	2.7	2.7	2.8	2.9	2.9	2.8	2.7	2.6	2.4	2.3	2.2	2.2	2.4	2.5	2.6	2.6	2.6	2.7	2.7	2.6	2.6
2.9	3.4	3.8	3.9	4.0	3.9	3.5	3.3	3.3	3.8	3.0	3.1	3.0	2.9	3.1	3.1	3.5	3.4	3.5	3.6	3.6	3.5	3.5	3.3	3.1	3.0	3.2	3.0	3.1	3.4	3.5	3.4	3.2	3.4	3.2	3.1
3.0	3.2	3.2	3.1	3.2	3.8	4.0	3.7	3.4	3.3	3.2	3.4	3.3	3.2	3.2	3.2	3.2	3.4	3.4	3.5	3.5	3.6	3.9	3.4	3.6	3.7	3.9	4.0	3.4	3.6	3.8	3.3	3.1	3.3	3.2	2.8
3.2	3.3	3.5	3.6	3.4	3.6	4.2	3.9	3.9	3.8	3.7	3.6	3.5	3.4	3.4	3.4	3.5	3.5	3.6	3.7	3.5	3.5	3.4	3.7	4.2	4.0	4.4	4.7	4.4	4.2	3.7	3.8	4.1	3.8	3.7	3.6
3.4	3.5	3.4	3.5	3.3	3.4	4.0	3.9	4.1	3.6	3.5	3.5	3.4	3.5	3.4	3.3	3.6	3.8	4.1	3.6	3.6	3.9	4.0	3.9	4.1	4.4	3.9	3.6	3.4	3.6	3.3	3.5	3.5	3.6	3.6	3.5
3.6	3.5	3.3	3.5	3.1	3.3	3.5	3.5	3.7	3.4	3.5	3.6	3.3	3.6	3.4	3.4	3.8	3.9	4.2	3.6	3.8	3.8	3.7	3.9	3.6	3.3	3.4	3.1	3.2	3.4	3.2	3.5	3.2	3.4	3.5	3.3
3.6	3.3	3.3	3.4	3.2	3.3	3.4	3.3	3.6	3.3	3.5	3.5	3.3	3.5	3.3	3.4	3.6	3.8	3.9	3.7	4.0	3.7	3.6	3.7	3.3	3.3	3.4	3.2	3.4	3.4	3.3	3.5	3.3	3.4	3.5	3.3
3.5	3.3	3.3	3.4	3.3	3.3	3.3	3.2	3.4	3.2	3.4	3.3	3.3	3.4	3.3	3.4	3.2	3.3	3.3	3.3	3.5	3.2	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.5	3.2
3.5	3.4	3.4	3.3	3.3	3.2	3.3	3.2	3.2	3.2	3.3	3.4	3.5	3.4	3.3	3.4	3.2	3.3	3.2	3.4	3.6	3.2	3.2	3.3	3.3	3.5	3.3	3.5	3.4	3.3	3.4	3.2	3.4	3.3	3.5	3.4
3.4	3.5	3.5	3.3	3.5	3.4	3.4	3.5	3.3	3.4	3.5	3.9	3.8	3.4	3.5	3.5	3.2	3.4	3.1	3.7	3.7	3.2	3.5	3.3	3.2	3.4	3.2	3.4	3.3	3.2	3.4	3.1	3.3	3.3	3.4	3.5
3.9	3.8	3.8	3.7	3.9	3.8	3.7	3.7	3.4	3.9	3.9	4.3	3.9	3.5	3.9	3.7	3.5	3.7	3.7	3.6	3.8	3.6	3.8	3.5	3.4	3.6	3.3	3.9	3.8	3.8	4.0	3.6	3.9	4.0	3.9	4.2
3.3	3.5	3.6	3.6	3.7	3.8	3.9	3.9	3.6	4.3	4.4	4.4	4.1	3.9	3.7	3.3	3.6	3.9	3.7	3.3	3.5	3.9	3.6	3.4	3.4	3.2	3.2	3.5	3.2	3.1	3.3	3.2	3.2	3.6	3.4	3.4
3.2	3.3	3.3	3.3	3.4	3.7	3.8	3.9	3.8	3.9	3.7	3.6	3.7	4.2	4.0	3.9	3.8	3.8	3.9	4.0	4.0	4.0	3.6	3.6	3.6	3.5	3.4	3.1	3.0	3.0	3.0	3.0	3.1	3.2	3.2	3.1
3.4	3.5	3.4	3.5	3.7	4.1	3.7	3.6	4.2	4.1	3.7	3.9	3.9	4.0	4.0	4.1	4.0	3.8	3.6	3.6	3.8	3.8	3.3	3.5	3.7	3.5	3.1	3.3	3.4	3.1	3.0	3.3	3.3	3.6	3.6	3.3
4.0	4.4	4.6	4.8	5.1	4.7	4.6	4.6	4.5	4.4	4.3	4.6	4.7	4.6	4.7	4.6	4.3	4.0	3.9	3.8	3.8	3.8	4.2	4.5	4.1	3.5	4.0	4.6	4.6	4.4	4.7	5.2	4.8	4.6	4.4	4.2
4.3	4.6	4.8	4.9	5.0	5.3	5.4	5.5	5.1	4.7	3.9	3.4	3.5	3.9	3.8	4.0	4.3	4.6	5.0	5.2	5.0	4.4	3.8	3.8	3.7	3.6	3.0	3.1	3.9	4.4	4.2	3.2	3.5	3.8	4.1	4.1
4.0	4.0	4.1	4.4	4.5	4.5	3.8	3.0	3.4	3.2	3.2	3.3	3.3	3.4	3.4	3.2	2.7	2.4	1.6	1.5	1.6	1.5	1.5	1.6	1.8	1.8	1.9	2.1	2.1	2.2	2.4	2.5	2.6	3.2	4.0	4.2

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



.8	.7	.8	.8	.8	1.0	1.2	1.4	1.5	1.7	2.1	2.0	1.9	1.8	1.6	1.2	1.0	.7	.6	.6	.6	.8	.8	.8	.8	.9	1.2	1.3	1.6	1.7	1.6	1.2	1.0	1.0	1.0	1.0
-1.2	-1.2	-.9	-.5	-.2	.2	.2	.1	.3	1.0	1.1	1.0	1.6	2.9	2.7	.4	-.3	-.3	-.4	-.7	-.3	-.3	-.3	-.3	-.1	.0	.3	.4	.5	.3	.1	.0	-.3	-.7	-1.0	-1.0
-3.0	-3.0	-2.8	-3.3	-2.4	-1.3	-1.1	-.3	-.4	-.5	-.8	-.6	-.8	-.2	-.2	-.6	-1.2	-1.9	-1.7	-1.3	-1.2	-1.2	-1.3	-1.2	-1.0	-.9	-.9	-.5	-.7	-.9	-1.0	-1.5	-1.1	-1.3	-1.7	-2.4
-2.6	-2.6	-3.1	-2.8	-1.7	-1.9	-1.9	-2.0	-2.3	-1.8	-1.6	-2.2	-2.8	-3.4	-3.2	-2.4	-2.0	-2.6	-3.1	-3.1	-2.8	-2.5	-2.5	-3.0	-2.7	-2.5	-2.8	-2.4	-2.8	-2.5	-2.0	-2.3	-2.2	-2.8	-2.5	-1.7
-3.0	-3.0	-3.7	-3.5	-3.6	-5.7	-4.9	-4.1	-4.5	-5.0	-4.8	-5.1	-5.2	-4.4	-4.4	-4.7	-4.9	-5.3	-4.9	-5.5	-5.8	-6.0	-6.6	-7.2	-8.5	-6.4	-4.9	-4.7	-4.2	-4.3	-5.5	-4.6	-3.7	-3.0	-3.8	-3.8
-4.6	-4.8	-5.4	-7.0	-8.2	-11.2	-9.8	-5.7	-6.4	-6.7	-6.7	-6.2	-6.5	-5.5	-7.1	-8.2	-7.9	-7.6	-6.8	-10.1	-14.6	-17.3	-16.7	-14.1	-16.7	-8.5	-5.0	-4.2	-4.7	-4.9	-5.6	-5.1	-5.9	-5.9	-6.0	-4.7
-5.0	-7.0	-8.9	-11.3	-12.6	-12.2	-8.5	-6.0	-5.8	-4.0	-4.4	-5.3	-7.5	-9.6	-9.8	-9.8	-9.2	-10.1	-10.9	-14.1	-16.9	-13.7	-12.6	-12.1	-10.9	-5.4	-3.4	-3.3	-4.1	-5.2	-6.7	-6.7	-7.1	-7.2	-5.5	-4.4
-5.9	-8.5	-10.0	-9.1	-7.0	-5.1	-3.9	-3.4	-3.7	-4.8	-6.1	-7.3	-9.4	-9.2	-9.0	-6.4	-5.8	-6.3	-5.8	-6.0	-5.0	-3.4	-6.4	-6.9	-4.9	-2.7	-1.8	-1.6	-2.7	-2.7	-2.3	-2.1	-3.3	-3.8	-4.0	-5.1
-4.1	-6.0	-7.2	-7.9	-9.0	-9.2	-8.0	-7.9	-6.6	-4.8	-3.6	-4.9	-7.0	-6.5	-5.3	-5.1	-4.8	-4.2	-2.6	-1.6	-2.0	-4.7	-9.3	-7.2	-3.6	-2.5	-2.3	-2.5	-3.9	-3.6	-2.9	-2.2	-2.4	-3.1	-3.0	-3.2
-10.3	-13.4	-15.2	-17.1	-17.5	-17.5	-17.5	-17.4	-15.1	-11.5	-6.0	-7.1	-10.5	-12.3	-12.5	-13.3	-12.7	-10.9	-8.8	-7.2	-8.9	-13.0	-14.2	-11.7	-7.8	-4.4	-3.5	-5.5	-9.8	-10.0	-8.7	-7.0	-5.4	-4.4	-5.7	-8.2
-8.3	-10.8	-12.5	-12.5	-13.1	-14.4	-14.7	-15.5	-15.6	-15.2	-9.5	-9.3	-13.7	-14.3	-13.5	-13.7	-14.7	-14.7	-14.4	-13.0	-13.4	-14.7	-14.9	-15.6	-14.6	-12.3	-11.7	-10.9	-12.8	-14.1	-14.8	-15.3	-15.5	-13.6	-10.6	-8.0
-6.9	-5.1	-4.4	-4.5	-4.4	-4.5	-4.7	-5.8	-8.2	-9.4	-10.9	-8.7	-9.8	-9.6	-7.3	-8.0	-9.1	-9.7	-12.6	-12.9	-11.2	-12.5	-12.2	-11.1	-12.3	-12.3	-13.0	-12.2	-11.3	-11.8	-11.7	-11.7	-11.3	-11.5	-10.6	-9.0
-2.7	-2.3	-1.9	-2.6	-2.5	-1.6	-1.1	-.9	-2.8	-3.0	-4.6	-5.2	-5.0	-4.4	-4.1	-3.9	-4.1	-3.8	-4.3	-5.6	-5.9	-6.7	-6.6	-6.6	-6.6	-6.3	-6.4	-5.5	-4.7	-4.5	-4.7	-5.3	-4.6	-3.5	-3.2	-2.7
-.9	-.5	-1.4	-1.5	-.3	-.3	-.5	-.2	-.7	-.7	-.7	-1.2	-1.3	-1.2	-.9	-.5	-.3	.1	.4	.0	-.6	-.7	-.8	-1.2	-.9	-.9	-.6	-.5	-.4	-.2	-.3	-1.0	-1.4	-1.0	-1.3	-.7
.1	.4	.4	.3	.5	.6	.3	.5	1.0	.9	1.3	1.2	1.3	1.7	1.7	2.6	3.0	3.0	3.7	3.7	3.3	3.4	3.0	3.1	3.0	2.6	2.6	2.1	2.0	2.2	1.5	1.2	.6	.8	.8	-.1
3.2	3.4	4.1	4.6	4.4	4.2	4.2	4.3	4.2	4.2	4.7	5.5	5.3	5.5	5.7	6.3	6.5	6.6	6.8	7.2	7.4	7.9	9.3	10.1	8.1	6.8	7.7	7.6	7.4	6.4	6.4	7.0	5.6	4.4	3.7	3.5
9.1	9.0	8.8	9.8	10.7	10.7	11.3	12.1	12.9	13.0	12.4	13.6	11.2	10.2	9.9	11.5	16.0	21.6	23.6	23.4	22.0	24.0	26.8	30.3	21.0	20.1	24.3	25.5	25.9	25.2	27.2	28.8	26.7	23.0	18.8	9.7
18.5	18.0	17.3	18.5	19.5	19.5	21.5	24.4	24.6	22.8	20.2	18.8	18.8	19.8	21.0	23.4	25.8	28.8	31.6	32.9	33.2	33.8	33.6	32.8	32.9	33.9	34.6	34.6	35.0	34.8	34.0	32.1	29.6	27.0	22.8	19.6

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



2.5	2.4	2.3	2.2	2.2	2.3	2.2	2.1	2.2	2.1	1.9	2.0	2.0	2.1	2.1	2.3	2.7	2.6	2.6	2.4	2.4	2.3	2.3	2.2	2.3	2.3	2.0	2.0	2.0	2.0	1.9	2.2	2.4	2.5	2.4	2.4
2.8	2.9	2.9	2.6	2.4	2.2	2.8	2.3	2.4	2.2	2.1	2.3	2.4	2.2	2.2	2.7	2.8	2.7	2.6	2.7	2.8	2.6	2.4	2.4	2.2	2.3	2.1	2.0	2.1	2.3	2.4	2.5	2.6	2.6	2.7	2.7
3.6	3.6	3.7	3.8	3.5	3.1	3.0	3.0	2.9	2.9	3.2	3.0	3.2	3.2	3.2	3.1	3.4	3.5	3.3	3.0	2.9	3.0	3.0	2.7	2.7	2.9	3.0	2.7	2.7	3.0	3.1	3.2	2.9	3.1	3.5	3.7
3.5	3.4	3.7	3.3	3.1	3.4	3.4	3.8	4.0	3.4	2.9	3.2	3.6	3.6	3.4	3.2	3.3	3.6	3.7	2.5	3.3	2.9	3.1	3.0	3.2	3.2	3.8	3.7	3.6	3.3	3.3	3.2	3.4	3.4	3.5	3.2
3.5	3.6	3.8	3.6	3.6	4.3	4.5	3.5	3.4	4.2	4.5	4.6	4.1	4.0	3.7	3.7	4.0	4.2	4.1	3.9	4.2	4.3	4.5	4.2	4.7	4.0	3.9	3.9	4.0	4.3	4.4	4.2	3.7	3.4	3.9	4.0
4.0	3.5	3.8	3.7	3.9	4.1	5.5	4.1	4.1	4.5	4.9	5.0	4.2	3.5	4.0	4.1	4.0	4.3	3.7	4.2	4.2	4.0	4.6	5.1	5.1	5.2	4.2	3.0	3.7	4.1	4.1	4.2	4.6	4.7	4.5	4.4
3.9	3.7	3.9	3.7	3.4	4.4	4.9	3.4	3.6	2.9	3.6	3.8	3.9	3.9	4.3	4.7	4.5	4.7	3.9	3.7	4.5	6.4	4.8	5.0	6.8	4.7	2.6	2.2	2.8	4.2	4.3	4.6	4.4	4.0	3.9	3.7
4.1	4.8	4.7	5.2	4.8	4.5	3.4	2.8	3.2	3.6	4.0	4.0	4.5	4.4	4.6	4.2	4.0	3.9	4.1	4.4	3.9	3.0	3.7	3.6	3.4	2.6	2.1	2.1	2.6	2.9	2.8	2.6	3.3	3.6	3.4	3.4
4.0	4.6	4.9	5.3	4.9	4.9	5.1	4.9	4.5	3.9	2.7	3.4	3.6	3.9	3.9	4.0	3.7	3.3	2.8	2.2	2.6	3.9	3.3	3.5	3.0	2.7	2.6	2.8	2.9	3.1	3.2	2.7	2.7	2.9	2.8	3.0
5.0	5.0	4.6	3.5	2.8	2.6	2.8	3.0	3.3	3.8	3.7	3.8	3.8	3.6	3.5	3.0	2.9	3.3	3.9	4.7	5.4	4.0	2.8	4.1	4.7	3.9	3.6	4.2	3.8	4.0	4.6	4.7	4.4	3.7	4.0	4.7
5.7	5.4	4.4	3.7	4.2	3.7	3.4	3.6	3.4	3.4	5.4	5.0	4.3	3.2	3.7	3.4	3.0	3.0	3.2	4.3	5.0	4.0	3.3	2.9	3.2	4.4	5.0	5.1	3.6	2.8	2.9	3.3	3.9	5.0	5.3	5.3
5.4	5.7	4.4	3.6	3.6	3.7	4.2	4.5	4.3	4.0	5.0	5.5	5.1	4.7	4.6	5.0	3.9	4.2	4.2	3.2	4.3	5.2	4.8	5.2	3.4	3.5	3.6	4.0	4.3	4.0	3.6	4.2	4.7	4.4	4.2	4.6
3.4	3.6	3.7	3.6	3.7	3.5	3.2	3.3	3.7	3.8	5.1	5.5	4.4	4.6	4.7	4.4	4.2	4.3	4.6	4.8	4.3	4.7	4.3	4.1	4.3	3.9	4.1	4.4	4.0	3.8	4.3	4.5	4.6	3.9	3.2	3.3
3.0	2.9	3.5	3.5	3.1	3.2	3.1	3.6	3.8	3.3	3.7	3.6	3.6	3.7	3.7	3.4	3.5	3.3	3.5	3.7	3.7	3.6	3.6	3.6	3.7	3.4	3.4	3.5	3.0	3.0	3.2	3.5	3.4	3.1	3.5	3.3
3.3	3.1	3.0	3.1	3.1	3.3	3.3	3.3	3.4	3.2	3.1	3.2	3.2	3.2	3.1	3.2	2.8	2.7	2.8	2.9	2.8	2.8	2.8	2.5	2.6	2.9	2.8	2.9	2.9	2.6	2.6	3.0	3.3	3.3	3.2	3.4
3.4	3.3	3.1	3.1	3.4	3.3	3.1	2.9	2.8	2.7	2.9	3.4	3.7	3.3	3.1	3.1	2.9	3.0	2.8	2.7	2.6	2.9	5.1	6.3	4.5	2.9	5.0	5.9	5.7	4.7	5.1	6.1	5.0	3.9	3.5	3.4
3.3	3.2	3.7	4.9	5.8	5.9	6.5	6.9	6.6	6.4	4.8	3.9	3.0	3.4	3.3	4.8	6.9	7.8	8.4	8.6	8.8	7.3	6.1	5.2	6.5	6.5	5.3	5.7	7.3	7.6	7.1	4.8	5.3	5.9	6.4	3.7
7.0	6.7	6.4	6.4	6.4	6.3	5.4	4.5	5.0	4.5	4.7	5.4	5.7	5.7	5.6	5.0	4.4	4.2	3.1	3.0	3.1	3.4	3.3	3.3	3.3	3.0	3.5	3.7	3.7	3.5	3.1	2.9	3.2	4.5	7.2	7.6

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS4 (400 hPa)
NOAA15, using all observations

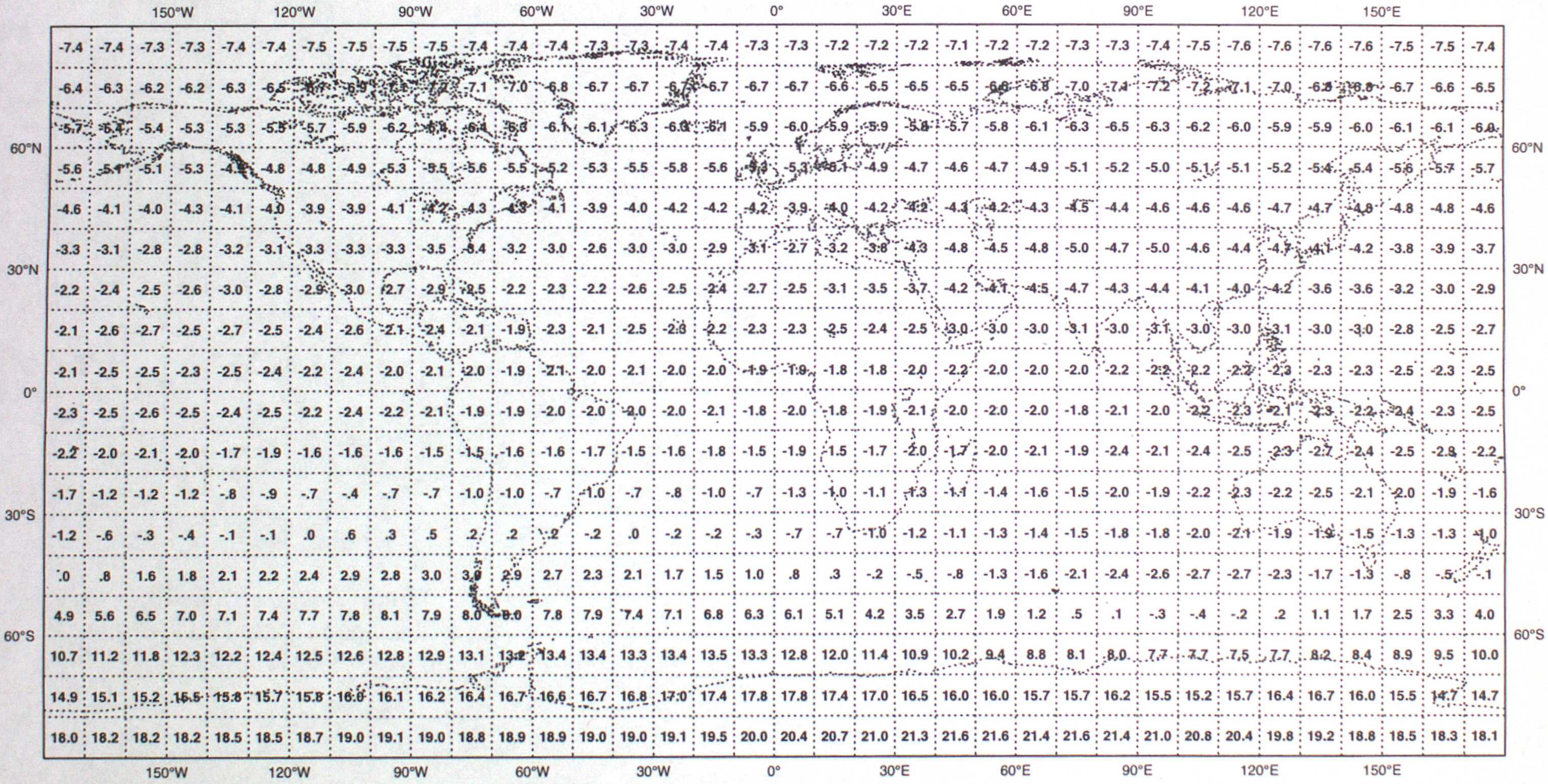
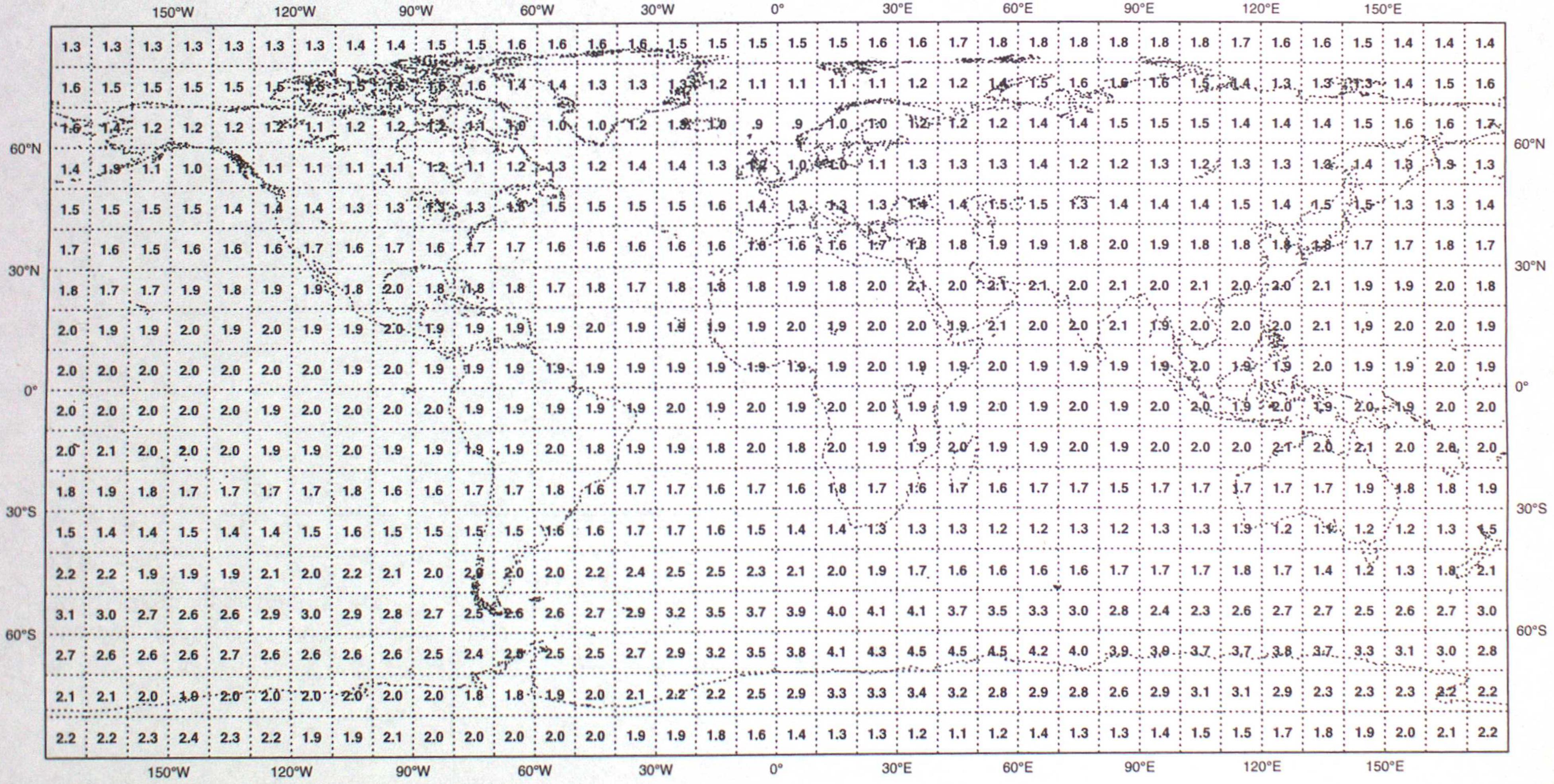

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-7.4 -7.4 -7.3 -7.3 -7.4 -7.4 -7.5 -7.5 -7.5 -7.5 -7.4 -7.4 -7.4 -7.3 -7.3 -7.4 -7.4 -7.3 -7.3 -7.2 -7.2 -7.2 -7.1 -7.2 -7.2 -7.3 -7.3 -7.4 -7.5 -7.6 -7.6 -7.6 -7.6 -7.5 -7.5 -7.4
-6.4 -6.3 -6.2 -6.2 -6.3 -6.5 -6.7 -6.9 -7.1 -7.2 -7.1 -7.0 -6.8 -6.7 -6.7 -6.7 -6.7 -6.7 -6.7 -6.6 -6.5 -6.5 -6.5 -6.6 -6.8 -7.0 -7.4 -7.2 -7.2 -7.1 -7.0 -6.8 -6.8 -6.7 -6.6 -6.5
-5.7 -6.4 -5.4 -5.3 -5.3 -5.5 -5.7 -5.9 -6.2 -6.4 -6.4 -6.6 -6.1 -6.1 -6.3 -6.0 -6.1 -5.9 -6.0 -5.9 -5.9 -5.8 -5.7 -5.8 -6.1 -6.3 -6.5 -6.3 -6.2 -6.0 -5.9 -5.9 -6.0 -6.1 -6.1 -6.0
-5.6 -5.4 -5.1 -5.3 -4.8 -4.8 -4.8 -4.9 -5.3 -5.5 -5.6 -5.5 -5.2 -5.3 -5.5 -5.8 -5.6 -5.3 -5.3 -5.1 -4.9 -4.7 -4.6 -4.7 -4.9 -5.1 -5.2 -5.0 -5.1 -5.1 -5.2 -5.4 -5.4 -5.6 -5.7 -5.7
-4.6 -4.1 -4.0 -4.3 -4.1 -4.0 -3.9 -3.9 -4.1 -4.2 -4.3 -4.3 -4.1 -3.9 -4.0 -4.2 -4.2 -4.2 -3.9 -4.0 -4.2 -4.2 -4.3 -4.2 -4.3 -4.5 -4.4 -4.6 -4.6 -4.6 -4.7 -4.7 -4.8 -4.8 -4.8 -4.6
-3.3 -3.1 -2.8 -2.8 -3.2 -3.1 -3.3 -3.3 -3.3 -3.5 -3.4 -3.2 -3.0 -2.6 -3.0 -3.0 -2.9 -3.1 -2.7 -3.2 -3.8 -4.3 -4.8 -4.5 -4.8 -5.0 -4.7 -5.0 -4.6 -4.4 -4.7 -4.1 -4.2 -3.8 -3.9 -3.7
-2.2 -2.4 -2.5 -2.6 -3.0 -2.8 -2.9 -3.0 -2.7 -2.9 -2.5 -2.2 -2.3 -2.2 -2.6 -2.5 -2.4 -2.7 -2.5 -3.1 -3.5 -3.7 -4.2 -4.1 -4.5 -4.7 -4.3 -4.4 -4.1 -4.0 -4.2 -3.6 -3.6 -3.2 -3.0 -2.9
-2.1 -2.6 -2.7 -2.5 -2.7 -2.5 -2.4 -2.6 -2.1 -2.4 -2.1 -1.9 -2.3 -2.1 -2.5 -2.3 -2.2 -2.3 -2.3 -2.5 -2.4 -2.5 -3.0 -3.0 -3.0 -3.1 -3.0 -3.1 -3.0 -3.0 -3.1 -3.0 -3.0 -2.8 -2.5 -2.7
-2.1 -2.5 -2.5 -2.3 -2.5 -2.4 -2.2 -2.4 -2.0 -2.1 -2.0 -1.9 -2.1 -2.0 -2.1 -2.0 -2.0 -1.9 -1.9 -1.8 -1.8 -2.0 -2.2 -2.0 -2.0 -2.0 -2.2 -2.2 -2.2 -2.2 -2.3 -2.3 -2.3 -2.5 -2.3 -2.5
-2.3 -2.5 -2.6 -2.5 -2.4 -2.5 -2.2 -2.4 -2.2 -2.1 -1.9 -1.9 -2.0 -2.0 -2.0 -2.0 -2.1 -1.8 -2.0 -1.8 -1.9 -2.1 -2.0 -2.0 -2.0 -1.8 -2.1 -2.0 -2.2 -2.3 -2.1 -2.3 -2.2 -2.4 -2.3 -2.5
-2.2 -2.0 -2.1 -2.0 -1.7 -1.9 -1.6 -1.6 -1.6 -1.5 -1.5 -1.6 -1.6 -1.7 -1.5 -1.6 -1.8 -1.5 -1.9 -1.5 -1.7 -2.0 -1.7 -2.0 -2.1 -1.9 -2.4 -2.1 -2.4 -2.5 -2.3 -2.7 -2.4 -2.5 -2.8 -2.2
-1.7 -1.2 -1.2 -1.2 -.8 -.9 -.7 -.4 -.7 -.7 -1.0 -1.0 -.7 -1.0 -.7 -.8 -1.0 -.7 -1.3 -1.0 -1.1 -1.3 -1.1 -1.4 -1.6 -1.5 -2.0 -1.9 -2.2 -2.3 -2.2 -2.5 -2.1 -2.0 -1.9 -1.6
-1.2 -.6 -.3 -.4 -.1 -.1 .0 .6 .3 .5 .2 .2 .2 -.2 .0 -.2 -.2 -.3 -.7 -.7 -1.0 -1.2 -1.1 -1.3 -1.4 -1.5 -1.8 -1.8 -2.0 -2.1 -1.9 -1.9 -1.5 -1.3 -1.3 -1.0
.0 .8 1.6 1.8 2.1 2.2 2.4 2.9 2.8 3.0 3.0 2.9 2.7 2.3 2.1 1.7 1.5 1.0 .8 .3 -.2 -.5 -.8 -1.3 -1.6 -2.1 -2.4 -2.6 -2.7 -2.7 -2.3 -1.7 -1.3 -.8 -.5 -.1
4.9 5.6 6.5 7.0 7.1 7.4 7.7 7.8 8.1 7.9 8.0 8.0 7.8 7.9 7.4 7.1 6.8 6.3 6.1 5.1 4.2 3.5 2.7 1.9 1.2 .5 .1 -.3 -.4 -.2 .2 1.1 1.7 2.5 3.3 4.0
10.7 11.2 11.8 12.3 12.2 12.4 12.5 12.6 12.8 12.9 13.1 13.2 13.4 13.4 13.3 13.4 13.5 13.3 12.8 12.0 11.4 10.9 10.2 9.4 8.8 8.1 8.0 7.7 7.7 7.5 7.7 8.2 8.4 8.9 9.5 10.0
14.9 15.1 15.2 15.5 15.8 15.7 15.8 16.0 16.1 16.2 16.4 16.7 16.6 16.7 16.8 17.0 17.4 17.8 17.8 17.4 17.0 16.5 16.0 16.0 15.7 15.7 16.2 15.5 15.2 15.7 16.4 16.7 16.0 15.5 14.7 14.7
18.0 18.2 18.2 18.2 18.5 18.5 18.7 19.0 19.1 19.0 18.8 18.9 18.9 19.0 19.0 19.1 19.5 20.0 20.4 20.7 21.0 21.3 21.6 21.6 21.4 21.6 21.4 21.0 20.8 20.4 19.8 19.2 18.8 18.5 18.3 18.1
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.4
1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.6	1.6	1.6	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.4	1.5	1.6	1.6	1.6	1.5	1.4	1.3	1.3	1.3	1.4	1.5	1.6
1.6	1.4	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	1.1	1.0	1.0	1.0	1.2	1.3	1.0	.9	.9	1.0	1.0	1.2	1.2	1.2	1.4	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.6	1.6	1.7
1.4	1.9	1.1	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.2	1.3	1.2	1.4	1.4	1.3	1.2	1.0	1.0	1.1	1.3	1.3	1.3	1.4	1.2	1.2	1.3	1.2	1.3	1.3	1.3	1.4	1.3	1.9	1.3
1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.6	1.5	1.5	1.5	1.5	1.6	1.4	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.3	1.4	1.4	1.4	1.5	1.4	1.5	1.5	1.3	1.3	1.4
1.7	1.6	1.5	1.6	1.6	1.6	1.7	1.6	1.7	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.8	1.8	1.9	1.9	1.8	2.0	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.8	1.7
1.8	1.7	1.7	1.9	1.8	1.9	1.9	1.8	2.0	1.8	1.8	1.8	1.7	1.8	1.7	1.8	1.8	1.8	1.9	1.8	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.1	2.0	2.0	2.1	1.9	1.9	2.0	1.8
2.0	1.9	1.9	2.0	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	2.0	2.0	1.9	2.1	2.0	2.0	2.1	1.9	2.0	2.0	2.0	2.1	1.9	2.0	2.0	1.9
2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.9	1.9	2.0	1.9	1.9	2.0	1.9
2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	1.9	2.0	1.9	2.0	2.0	1.9	1.9	2.0	1.9	2.0	1.9	2.0	2.0	1.9	2.0	1.9	2.0	1.9	2.0	2.0
2.0	2.1	2.0	2.0	2.0	1.9	1.9	2.0	1.9	1.9	1.9	1.9	2.0	1.8	1.9	1.9	1.8	2.0	1.8	2.0	1.9	1.9	2.0	1.9	1.9	2.0	1.9	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.8	2.0
1.8	1.9	1.8	1.7	1.7	1.7	1.7	1.8	1.6	1.6	1.7	1.7	1.8	1.6	1.7	1.7	1.6	1.7	1.6	1.8	1.7	1.6	1.7	1.6	1.7	1.7	1.5	1.7	1.7	1.7	1.7	1.7	1.9	1.8	1.8	1.9
1.5	1.4	1.4	1.5	1.4	1.4	1.5	1.6	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.3	1.2	1.3	1.3	1.9	1.2	1.4	1.2	1.2	1.3	1.5
2.2	2.2	1.9	1.9	1.9	2.1	2.0	2.2	2.1	2.0	2.9	2.0	2.0	2.2	2.4	2.5	2.5	2.3	2.1	2.0	1.9	1.7	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.7	1.4	1.2	1.3	1.8	2.1
3.1	3.0	2.7	2.6	2.6	2.9	3.0	2.9	2.8	2.7	2.5	2.6	2.6	2.7	2.9	3.2	3.5	3.7	3.9	4.0	4.1	4.1	3.7	3.5	3.3	3.0	2.8	2.4	2.3	2.6	2.7	2.7	2.5	2.6	2.7	3.0
2.7	2.6	2.6	2.6	2.7	2.6	2.6	2.6	2.6	2.5	2.4	2.5	2.5	2.5	2.7	2.9	3.2	3.5	3.8	4.1	4.3	4.5	4.5	4.5	4.2	4.0	3.9	3.9	3.7	3.7	3.8	3.7	3.3	3.1	3.0	2.8
2.1	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.5	2.9	3.3	3.3	3.4	3.2	2.8	2.9	2.8	2.6	2.9	3.1	3.1	2.9	2.3	2.3	2.3	2.2	2.2
2.2	2.2	2.3	2.4	2.3	2.2	1.9	1.9	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.8	1.6	1.4	1.3	1.3	1.2	1.1	1.2	1.4	1.3	1.3	1.4	1.5	1.5	1.7	1.8	1.9	2.0	2.1	2.2

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations

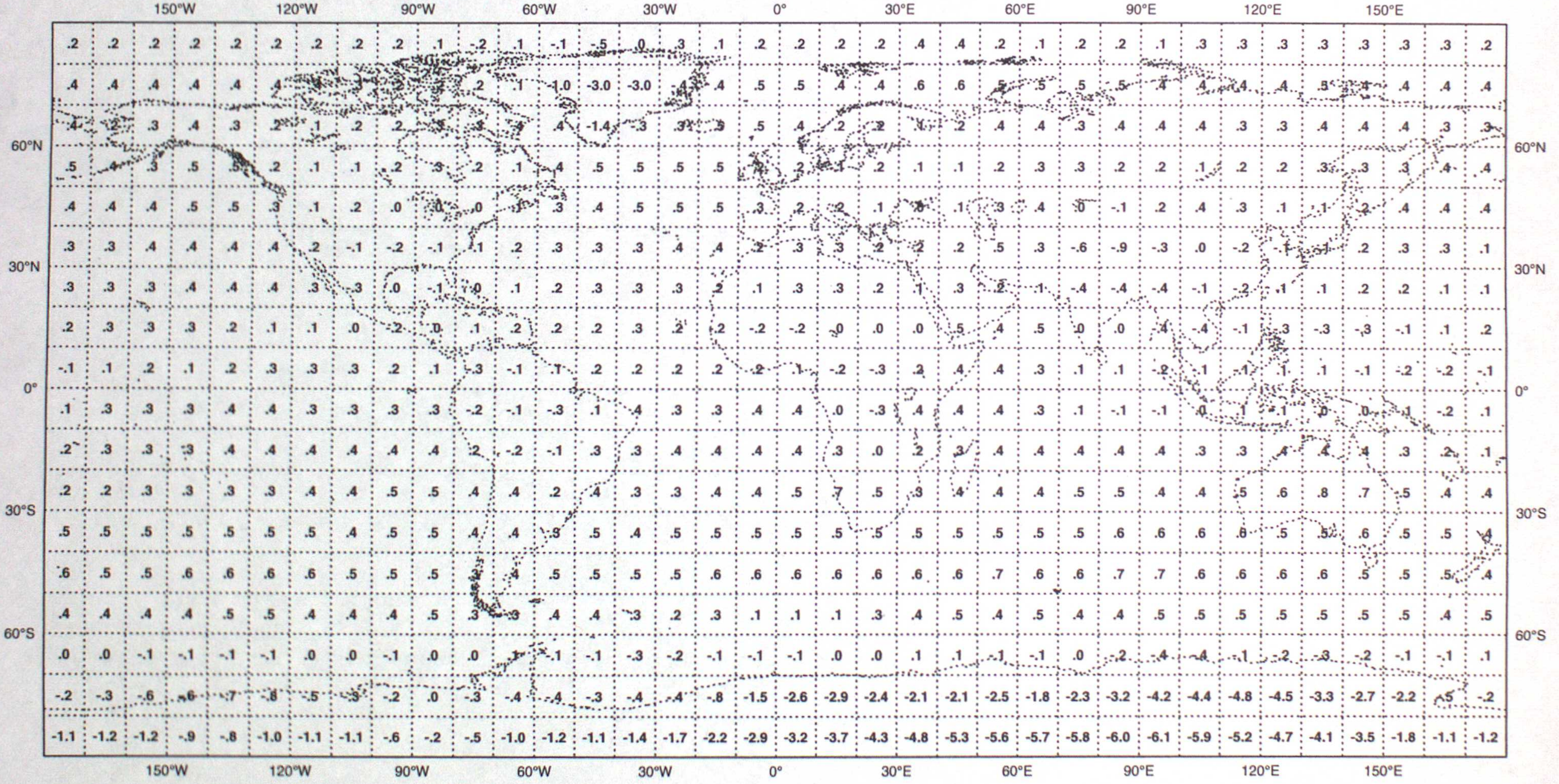
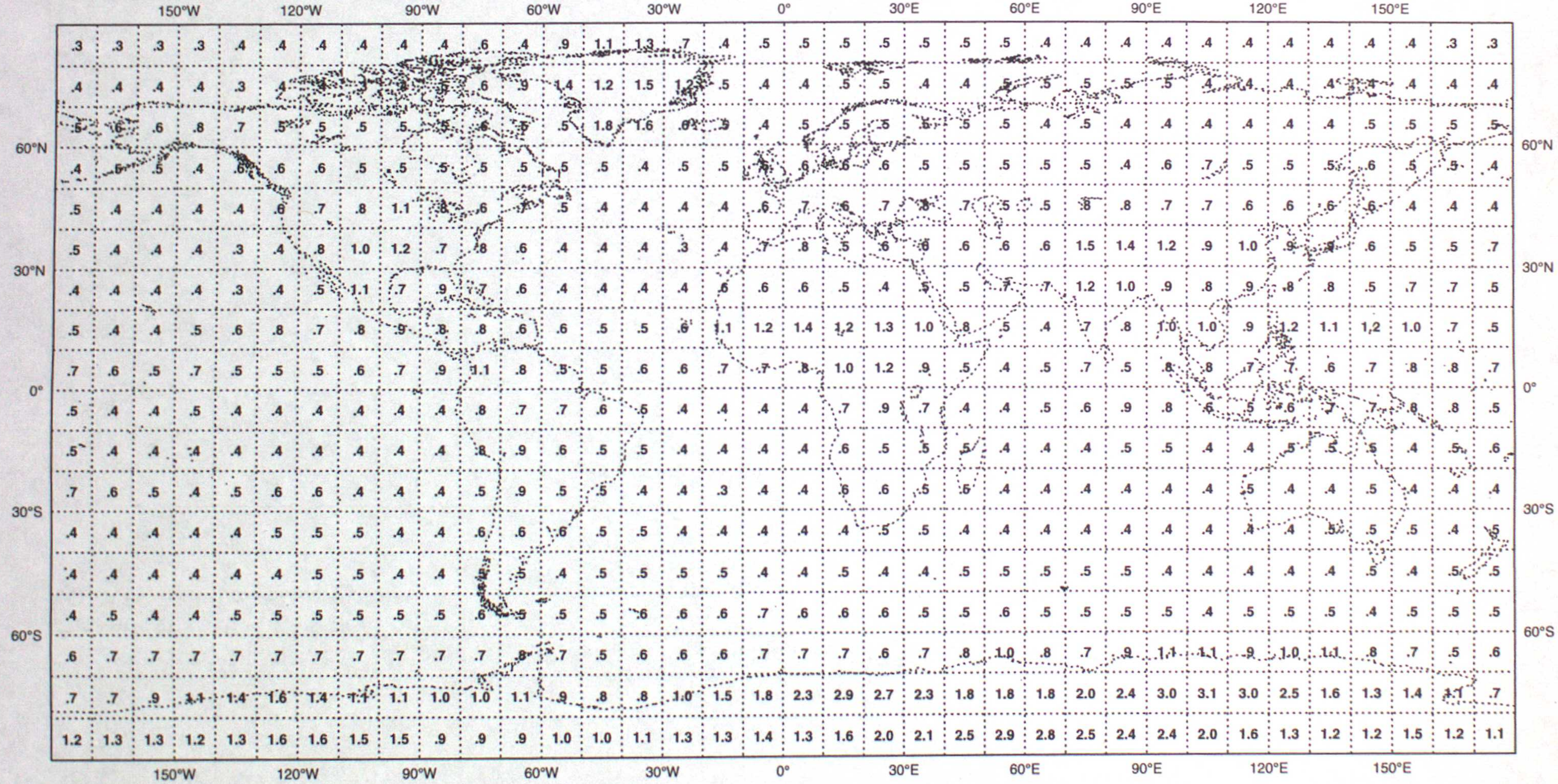

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.2 .2 .2 .2 .2 .2 .2 .2 .2 .1 -.2 .1 -.1 -.5 .0 .3 .1 .2 .2 .2 .2 .4 .4 .2 .1 .2 .2 .1 .3 .3 .3 .3 .3 .3 .3 .2
.4 .4 .4 .4 .4 .4 .4 .3 .2 .2 .2 .1 -1.0 -3.0 -3.0 -.4 .4 .5 .5 .4 .4 .6 .6 .5 .5 .5 .5 .4 .4 .4 .4 .5 .4 .4 .4 .4
.4 .2 .3 .4 .3 .2 .1 .2 .2 .3 .3 .4 .4 -1.4 .3 .3 .5 .5 .4 .2 .2 .1 .2 .4 .4 .3 .4 .4 .4 .3 .3 .4 .4 .4 .3 .3
.5 .4 .3 .5 .5 .2 .1 .1 .2 .3 .2 .1 .4 .5 .5 .5 .5 .2 .2 .1 .2 .1 .1 .2 .3 .3 .2 .2 .1 .2 .2 .3 .3 .3 .4 .4
.4 .4 .4 .5 .5 .3 .1 .2 .0 .0 .0 .1 .3 .4 .5 .5 .5 .3 .2 .2 .1 .0 .1 .3 .4 .0 -.1 .2 .4 .3 .1 .1 .2 .4 .4 .4
.3 .3 .4 .4 .4 .4 .2 -.1 -.2 -.1 .1 .2 .3 .3 .3 .4 .4 .2 .3 .3 .2 .2 .2 .5 .3 -.6 -.9 -.3 .0 -.2 -.1 -.1 .2 .3 .3 .1
.3 .3 .3 .4 .4 .4 .3 -.3 .0 -.1 .0 .1 .2 .3 .3 .3 .2 .1 .3 .3 .2 .1 .3 .2 .1 -.4 -.4 -.4 -.1 -.2 .1 .1 .2 .2 .1 .1
.2 .3 .3 .3 .2 .1 .1 .0 -.2 .0 .1 .2 .2 .2 .3 .2 .2 -.2 -.2 .0 .0 .0 .5 .4 .5 .0 .0 -.4 -.4 -.1 .3 -.3 -.3 -.1 .1 .2
-.1 .1 .2 .1 .2 .3 .3 .3 .2 .1 -.3 -.1 .1 .2 .2 .2 .2 .2 .1 -.2 -.3 .2 .4 .4 .3 .1 .1 -.2 -.1 -.1 .1 .1 -.1 -.2 -.2 -.1
.1 .3 .3 .3 .4 .4 .3 .3 .3 .3 -.2 -.1 -.3 .1 .4 .3 .3 .4 .4 .0 -.3 .4 .4 .4 .3 .1 -.1 -.1 .0 .1 .1 .0 .0 .1 -.2 .1
.2 .3 .3 .3 .4 .4 .4 .4 .4 .4 .2 -.2 -.1 .3 .3 .4 .4 .4 .4 .3 .0 .2 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .3 .2 .1
.2 .2 .3 .3 .3 .3 .4 .4 .5 .5 .4 .4 .2 .4 .3 .3 .4 .4 .5 .7 .5 .3 .4 .4 .4 .5 .5 .4 .4 .5 .6 .8 .7 .5 .4 .4
.5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .4 .4 .3 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .6 .5 .5 .4
.6 .5 .5 .6 .6 .6 .6 .5 .5 .5 .3 .4 .5 .5 .5 .5 .6 .6 .6 .6 .6 .6 .6 .7 .6 .6 .7 .7 .6 .6 .6 .6 .5 .5 .5 .4
.4 .4 .4 .4 .5 .5 .4 .4 .4 .5 .3 .3 .4 .4 .3 .2 .3 .1 .1 .1 .3 .4 .5 .4 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .5
.0 .0 -.1 -.1 -.1 -.1 .0 .0 -.1 .0 .0 .1 -.1 -.1 -.3 -.2 -.1 -.1 -.1 .0 .0 .1 .1 -.1 -.1 .0 -.2 -.4 -.4 -.1 -.2 -.3 -.2 -.1 -.1 .1
-.2 -.3 -.6 -.6 -.7 -.8 -.5 -.3 -.2 .0 -.3 -.4 -.4 -.3 -.4 -.4 -.8 -1.5 -2.6 -2.9 -2.4 -2.1 -2.1 -2.5 -1.8 -2.3 -3.2 -4.2 -4.4 -4.8 -4.5 -3.3 -2.7 -2.2 -.5 -.2
-1.1 -1.2 -1.2 -.9 -.8 -1.0 -1.1 -1.1 -.6 -.2 -.5 -1.0 -1.2 -1.1 -1.4 -1.7 -2.2 -2.9 -3.2 -3.7 -4.3 -4.8 -5.3 -5.6 -5.7 -5.8 -6.0 -6.1 -5.9 -5.2 -4.7 -4.1 -3.5 -1.8 -1.1 -1.2

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.6	.4	.9	1.1	1.3	.7	.4	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3
.4	.4	.4	.4	.3	.4	.4	.3	.8	.5	.6	.9	1.4	1.2	1.5	1.2	.5	.4	.4	.5	.5	.4	.4	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4
.5	.6	.6	.8	.7	.5	.5	.5	.5	.5	.6	.5	.5	1.8	1.6	.6	.5	.4	.5	.5	.5	.5	.5	.5	.4	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5
.4	.5	.5	.4	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.6	.6	.6	.6	.5	.5	.5	.5	.5	.4	.6	.7	.5	.5	.5	.6	.5	.5	.4
.5	.4	.4	.4	.4	.6	.7	.8	1.1	.8	.6	.7	.5	.4	.4	.4	.4	.6	.7	.6	.7	.8	.7	.5	.5	.8	.8	.7	.7	.6	.6	.6	.6	.4	.4	.4
.5	.4	.4	.4	.3	.4	.8	1.0	1.2	.7	.8	.6	.4	.4	.4	.3	.4	.7	.8	.5	.6	.6	.6	.6	.6	1.5	1.4	1.2	.9	1.0	.9	.9	.6	.5	.5	.7
.4	.4	.4	.4	.3	.4	.5	1.1	.7	.9	.7	.6	.4	.4	.4	.4	.6	.6	.6	.5	.4	.5	.5	.7	.7	1.2	1.0	.9	.8	.9	.8	.8	.5	.7	.7	.5
.5	.4	.4	.5	.6	.8	.7	.8	.9	.8	.8	.6	.6	.5	.5	.6	1.1	1.2	1.4	1.2	1.3	1.0	.8	.5	.4	.7	.8	1.0	1.0	.9	1.2	1.1	1.2	1.0	.7	.5
.7	.6	.5	.7	.5	.5	.5	.6	.7	.9	1.1	.8	.5	.5	.6	.6	.7	.7	.8	1.0	1.2	.9	.5	.4	.5	.7	.5	.8	.8	.7	.7	.6	.7	.8	.8	.7
.5	.4	.4	.5	.4	.4	.4	.4	.4	.4	.8	.7	.7	.6	.5	.4	.4	.4	.4	.7	.9	.7	.4	.4	.5	.6	.9	.8	.6	.5	.6	.7	.7	.8	.8	.5
.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.8	.9	.6	.5	.5	.4	.4	.4	.4	.6	.5	.5	.5	.4	.4	.4	.5	.5	.4	.4	.5	.5	.5	.4	.5	.6
.7	.6	.5	.4	.5	.6	.6	.4	.4	.4	.5	.9	.5	.5	.4	.4	.3	.4	.4	.6	.6	.5	.5	.4	.4	.4	.4	.4	.4	.5	.4	.4	.5	.4	.4	.4
.4	.4	.4	.4	.4	.5	.5	.5	.4	.4	.6	.6	.6	.5	.5	.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.4	.5
.4	.4	.4	.4	.4	.4	.5	.5	.4	.4	.5	.5	.4	.5	.5	.5	.5	.4	.4	.5	.4	.4	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.4	.5	.5
.4	.5	.4	.4	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.6	.6	.6	.7	.6	.6	.6	.5	.5	.6	.5	.5	.5	.5	.4	.5	.5	.5	.4	.5	.5	.5
.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.7	.5	.6	.6	.6	.7	.7	.7	.6	.7	.8	1.0	.8	.7	.9	1.1	1.1	.9	1.0	1.1	.8	.7	.5	.6
.7	.7	.9	1.1	1.4	1.6	1.4	1.1	1.1	1.0	1.0	1.1	.9	.8	.8	1.0	1.5	1.8	2.3	2.9	2.7	2.3	1.8	1.8	1.8	2.0	2.4	3.0	3.1	3.0	2.5	1.6	1.3	1.4	1.1	.7
1.2	1.3	1.3	1.2	1.3	1.6	1.6	1.5	1.5	.9	.9	.9	1.0	1.0	1.1	1.3	1.3	1.4	1.3	1.6	2.0	2.1	2.5	2.9	2.8	2.5	2.4	2.4	2.0	1.6	1.3	1.2	1.2	1.5	1.2	1.1

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

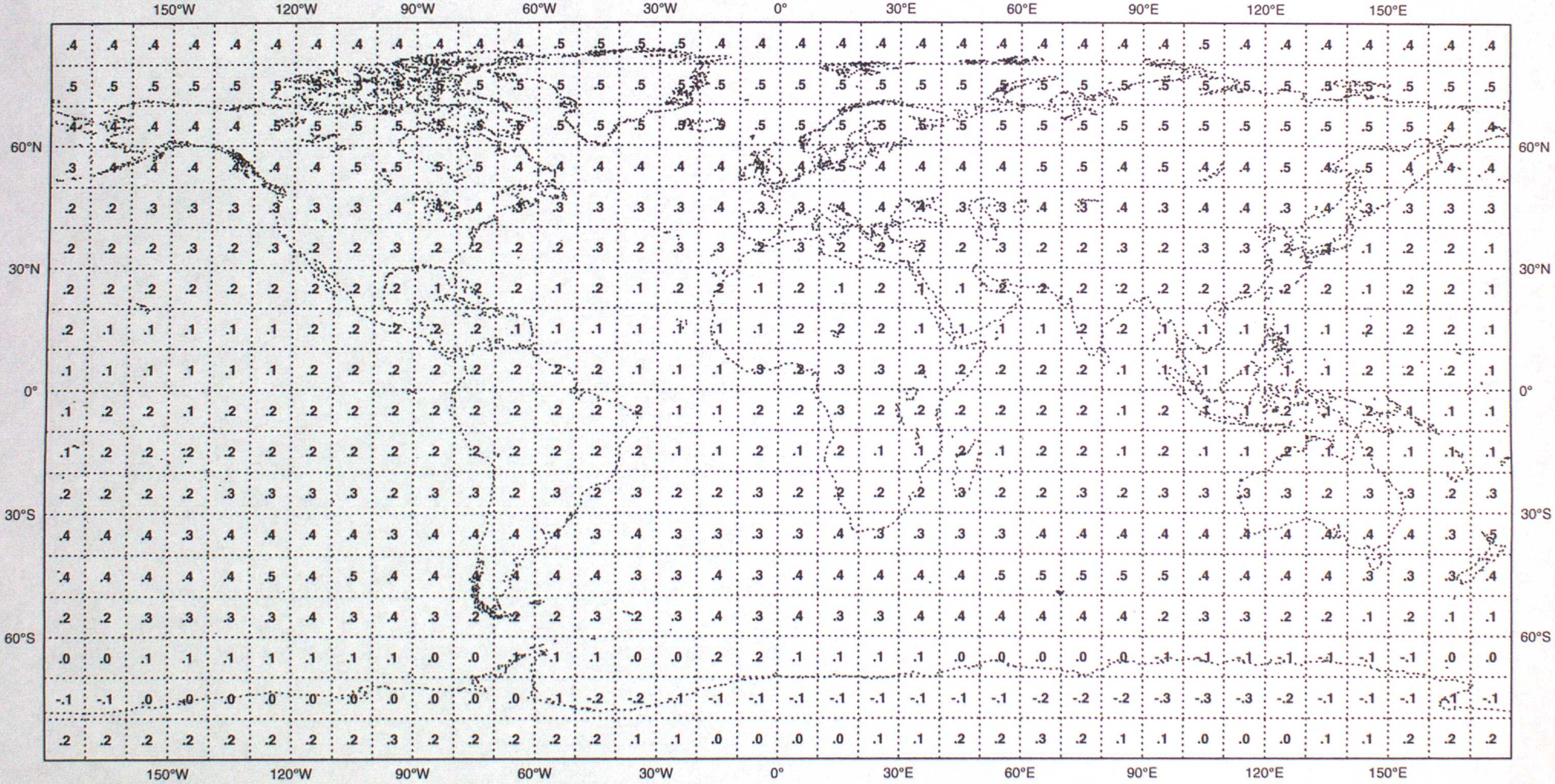

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4
.3 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .5 .5 .4 .5 .4 .4 .5 .4 .5 .4 .4 .4
.2 .2 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .4 .3 .3 .4 .4 .4 .3 .3 .4 .3 .4 .3 .4 .4 .3 .4 .3 .3 .3 .3
.2 .2 .2 .3 .2 .3 .2 .2 .3 .2 .2 .2 .2 .3 .2 .3 .3 .2 .3 .2 .2 .2 .2 .3 .2 .2 .3 .2 .3 .3 .2 .1 .1 .2 .2 .1
.2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2 .1 .2 .1 .2 .2 .1 .2 .1 .2 .1 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .2 .2 .1
.2 .1 .1 .1 .1 .1 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .2 .2 .2 .1 .1 .1 .1 .2 .2 .1 .1 .1 .1 .1 .2 .2 .2 .1
.1 .1 .1 .1 .1 .1 .2 .2 .2 .2 .2 .2 .2 .2 .1 .1 .1 .3 .2 .3 .3 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .2 .2 .2 .1
.1 .2 .2 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .1 .2 .2 .3 .2 .2 .2 .2 .2 .2 .1 .2 .1 .1 .2 .1 .2 .1 .1 .1
.1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .1 .1 .2 .1 .2 .1 .1 .2 .1 .2 .2 .1 .2 .1 .1 .2 .1 .2 .1 .1 .1
.2 .2 .2 .2 .3 .3 .3 .3 .2 .3 .3 .2 .3 .2 .3 .2 .2 .3 .2 .2 .2 .2 .3 .2 .2 .3 .2 .3 .3 .3 .3 .2 .3 .3 .2 .3
.4 .4 .4 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .5
.4 .4 .4 .4 .4 .5 .4 .5 .4 .4 .4 .4 .4 .4 .3 .3 .4 .3 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .4 .4 .4 .4 .3 .3 .3 .4
.2 .2 .3 .3 .3 .3 .4 .3 .4 .3 .2 .2 .2 .3 .2 .3 .4 .3 .4 .3 .3 .4 .4 .4 .4 .4 .4 .2 .3 .3 .2 .2 .1 .2 .1 .1
.0 .0 .1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .1 .1 .0 .0 .2 .2 .1 .1 .1 .1 .0 .0 .0 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .0 .0
-.1 -.1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.3 -.3 -.3 -.2 -.1 -.1 -.1 -.1 -.1
.2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .2 .2 .2 .2 .1 .1 .0 .0 .0 .0 .1 .1 .2 .2 .3 .2 .1 .1 .0 .0 .0 .1 .1 .2 .2 .2

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations

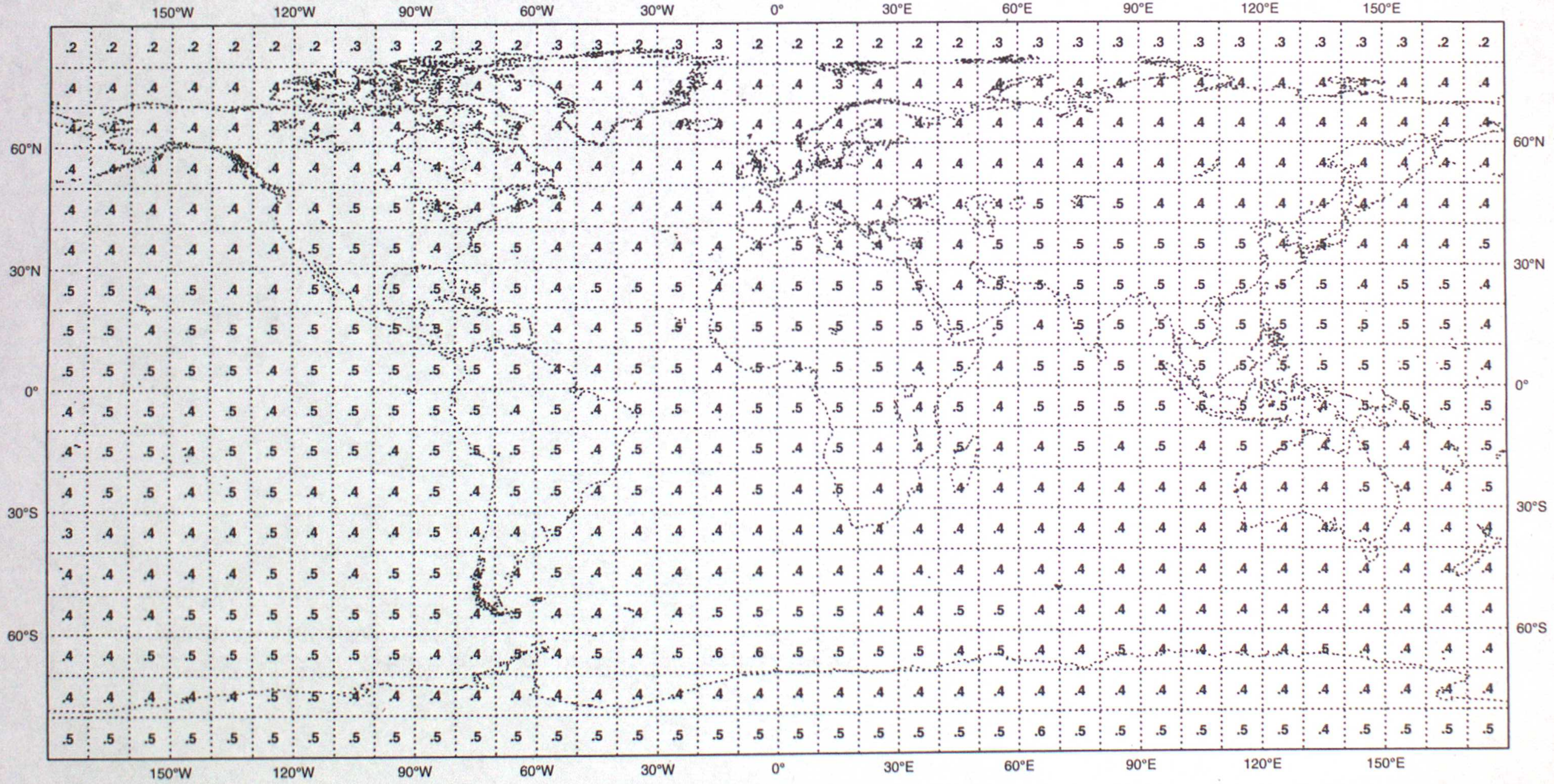

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .2 .2 .2 .2 .3 .3 .2 .2 .2 .3 .3 .2 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2
.4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .5 .5 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .5 .4 .4 .4 .5
.5 .5 .4 .5 .4 .4 .5 .4 .5 .5 .5 .5 .4 .5 .5 .5 .4 .4 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .4
.5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .5 .4 .4 .5 .5 .4 .5 .4 .5 .5 .4 .5 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4
.4 .5 .5 .4 .5 .4 .5 .5 .5 .5 .5 .4 .5 .4 .6 .5 .4 .5 .5 .5 .5 .4 .5 .4 .5 .5 .5 .5 .6 .5 .5 .4 .5 .6 .5 .5
.4 .5 .5 .4 .5 .5 .5 .5 .4 .5 .5 .5 .5 .4 .5 .4 .4 .5 .4 .5 .4 .4 .5 .4 .4 .5 .4 .5 .4 .5 .5 .4 .5 .4 .4 .5
.4 .5 .5 .4 .5 .5 .4 .4 .4 .5 .4 .5 .5 .4 .5 .4 .4 .5 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .5
.3 .4 .4 .4 .4 .5 .4 .4 .4 .5 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .5 .5 .4 .5 .5 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .5 .4 .4 .4 .4 .5 .5 .5 .5 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .5 .5 .5 .5 .5 .5 .5 .4 .4 .5 .4 .5 .4 .5 .6 .6 .5 .5 .5 .5 .4 .5 .4 .4 .5 .4 .4 .4 .4 .5 .4 .4 .4 .4
.4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004

Channel: AMSUA-9 (100 hPa)

NOAA15, using all observations

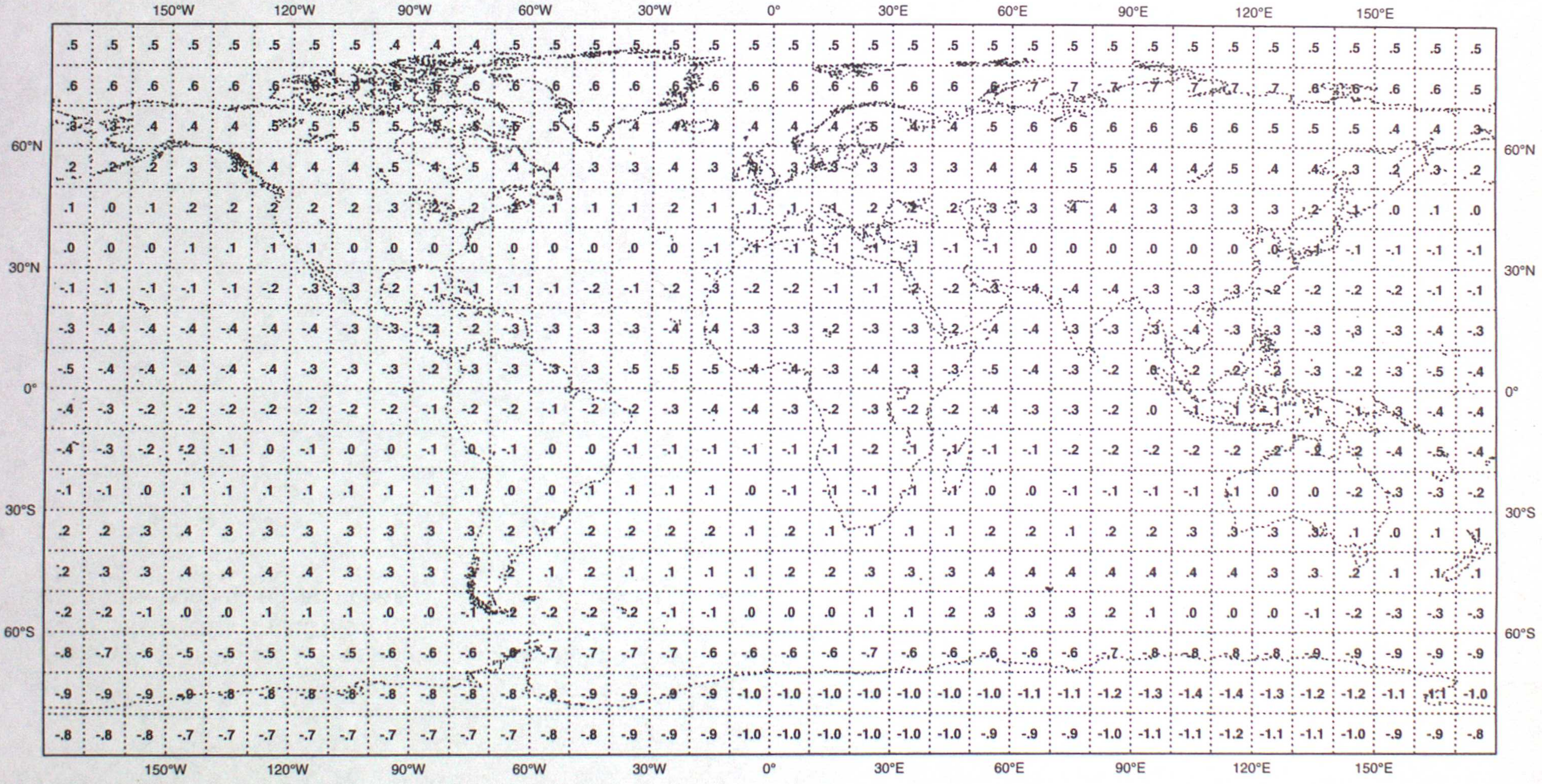

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5
.6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7 .6 .6 .6 .6 .5
.3 .3 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4 .4 .5 .4 .4 .5 .6 .6 .6 .6 .6 .6 .5 .5 .5 .4 .4 .3
.2 .2 .2 .3 .3 .4 .4 .4 .5 .4 .5 .4 .4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .5 .5 .4 .4 .5 .4 .4 .3 .2 .3 .2
.1 .0 .1 .2 .2 .2 .2 .2 .3 .2 .2 .2 .1 .1 .1 .2 .1 .1 .1 .1 .2 .2 .2 .3 .3 .4 .4 .3 .3 .3 .3 .2 .1 .0 .1 .0
.0 .0 .0 .1 .1 .1 .1 .0 .0 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .0 .0 .0 .0 .0 .0 .0 -.1 -.1 -.1 -.1 -.1
-.1 -.1 -.1 -.1 -.1 -.2 -.3 -.3 -.2 -.1 -.1 -.1 -.1 -.2 -.1 -.2 -.3 -.2 -.2 -.1 -.1 -.2 -.2 -.3 -.4 -.4 -.4 -.3 -.3 -.3 -.2 -.2 -.2 -.2 -.1 -.1
-.3 -.4 -.4 -.4 -.4 -.4 -.4 -.3 -.3 -.2 -.2 -.3 -.3 -.3 -.3 -.4 -.4 -.3 -.3 -.2 -.3 -.3 -.2 -.4 -.4 -.3 -.3 -.3 -.4 -.3 -.3 -.3 -.3 -.3 -.4 -.3
-.5 -.4 -.4 -.4 -.4 -.4 -.3 -.3 -.3 -.2 -.3 -.3 -.3 -.3 -.5 -.5 -.5 -.4 -.4 -.3 -.4 -.3 -.3 -.5 -.4 -.3 -.2 .0 -.2 -.2 -.3 -.3 -.2 -.3 -.5 -.4
-.4 -.3 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.1 -.2 -.2 -.1 -.2 -.2 -.3 -.4 -.4 -.3 -.2 -.3 -.2 -.2 -.4 -.3 -.3 -.2 .0 -.1 -.1 -.1 -.1 -.1 -.3 -.4 -.4
-.4 -.3 -.2 -.2 -.1 .0 -.1 .0 .0 -.1 .0 -.1 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.4 -.5 -.4
-.1 -.1 .0 .1 .1 .1 .1 .1 .1 .1 .1 .0 .0 .1 .1 .1 .1 .0 -.1 -.1 -.1 -.1 -.1 .0 .0 -.1 -.1 -.1 -.1 .1 .0 .0 -.2 -.3 -.3 -.2
.2 .2 .3 .4 .3 .3 .3 .3 .3 .3 .3 .2 .1 .2 .2 .2 .2 .1 .2 .1 .1 .1 .1 .2 .2 .1 .2 .2 .3 .3 .3 .3 .1 .0 .1 .1
.2 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .2 .1 .2 .1 .1 .1 .1 .2 .2 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .3 .2 .1 .1 .1
-.2 -.2 -.1 .0 .0 .1 .1 .1 .0 .0 -.1 -.2 -.2 -.2 -.2 -.1 -.1 .0 .0 .0 .1 .1 .2 .3 .3 .3 .2 .1 .0 .0 .0 -.1 -.2 -.3 -.3 -.3
-.8 -.7 -.6 -.5 -.5 -.5 -.5 -.5 -.6 -.6 -.6 -.6 -.7 -.7 -.7 -.7 -.6 -.6 -.6 -.6 -.7 -.6 -.6 -.6 -.6 -.6 -.7 -.8 -.8 -.8 -.8 -.9 -.9 -.9 -.9 -.9
-.9 -.9 -.9 -.9 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.8 -.9 -.9 -.9 -.9 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -1.1 -1.1 -1.2 -1.3 -1.4 -1.4 -1.3 -1.2 -1.2 -1.1 -1.1 -1.0
-.8 -.8 -.8 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.7 -.8 -.8 -.9 -.9 -.9 -1.0 -1.0 -1.0 -1.0 -1.0 -1.0 -.9 -.9 -.9 -1.0 -1.1 -1.1 -1.2 -1.1 -1.1 -1.0 -.9 -.9 -.8

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

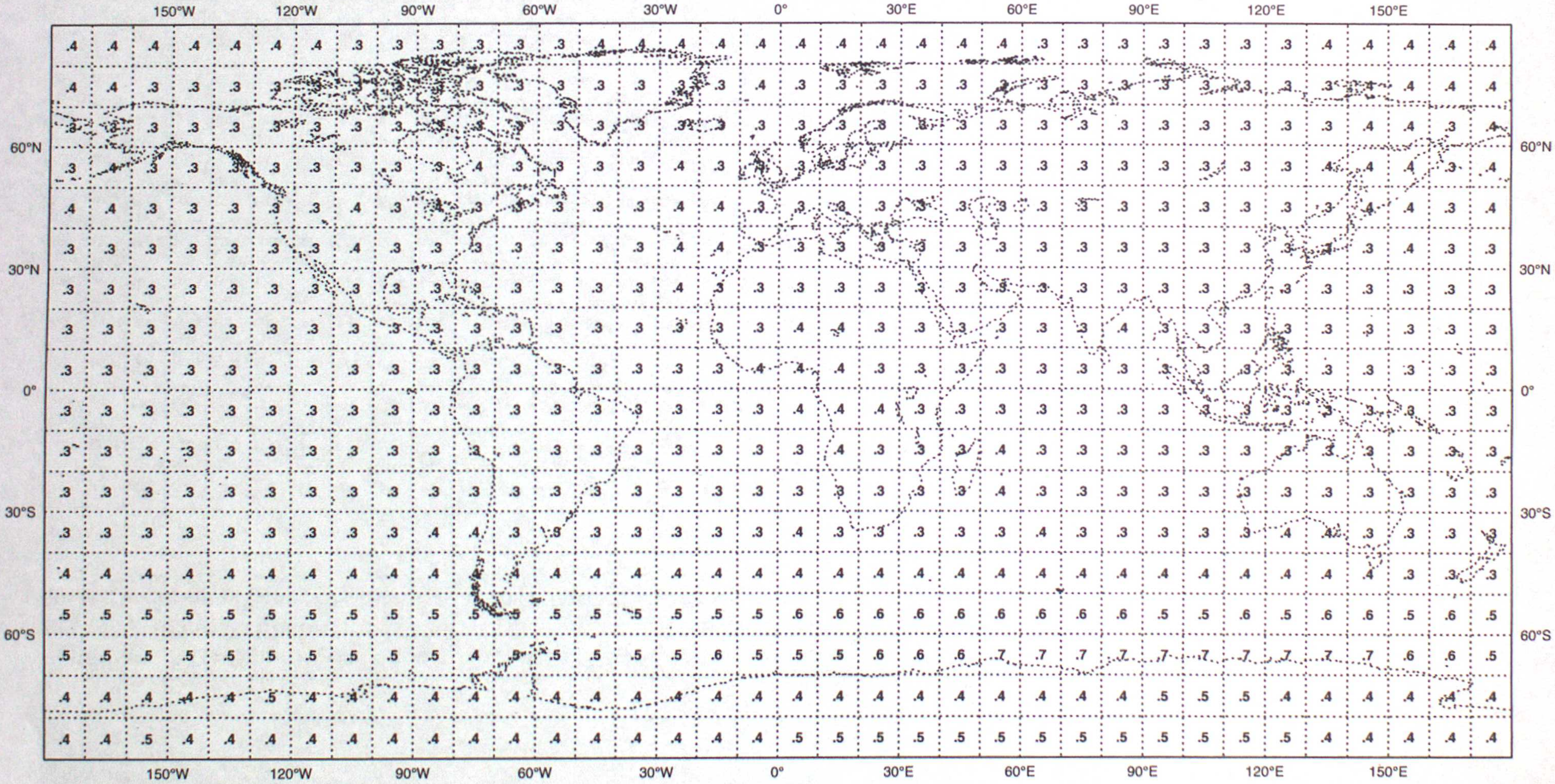
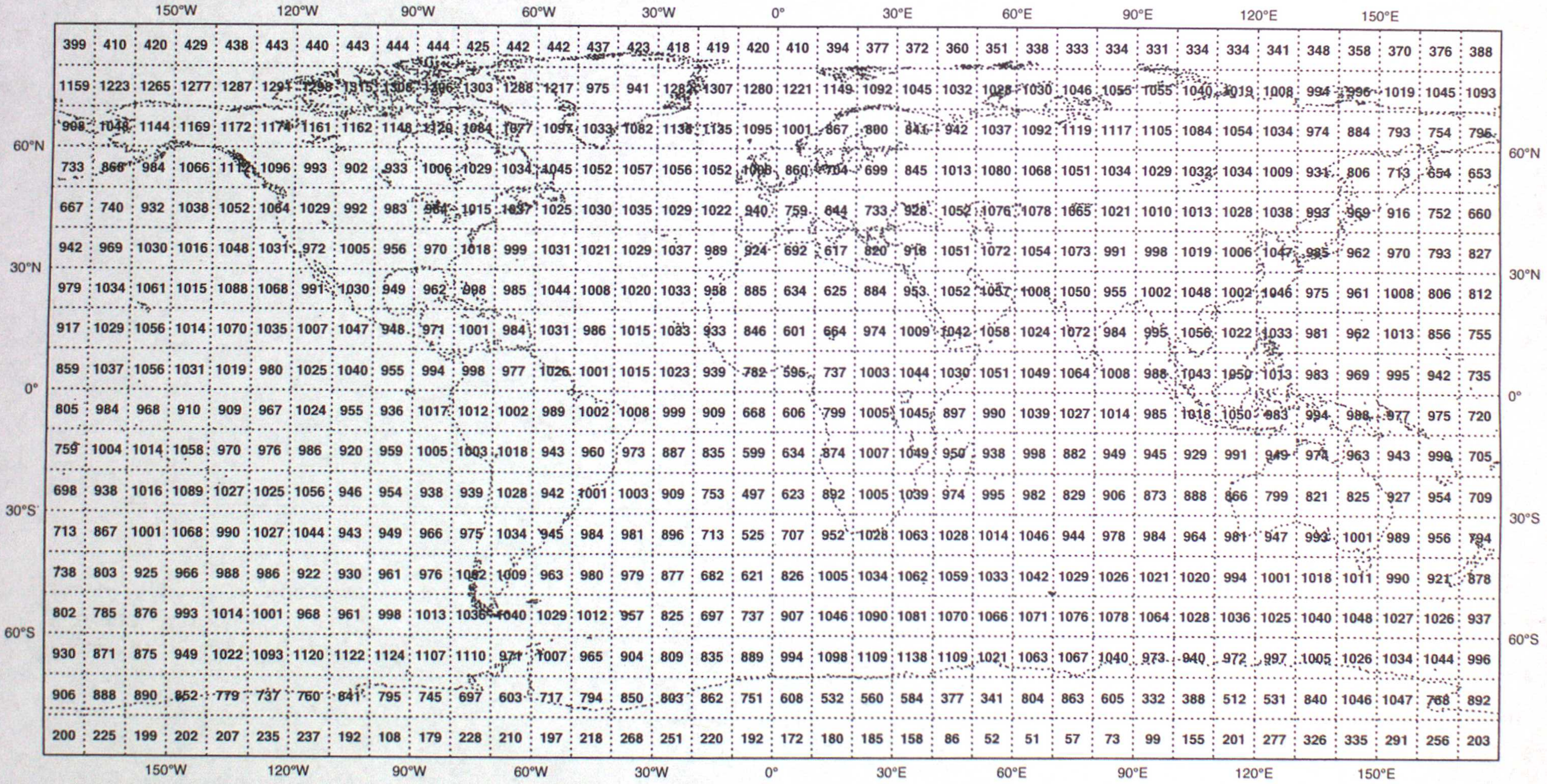
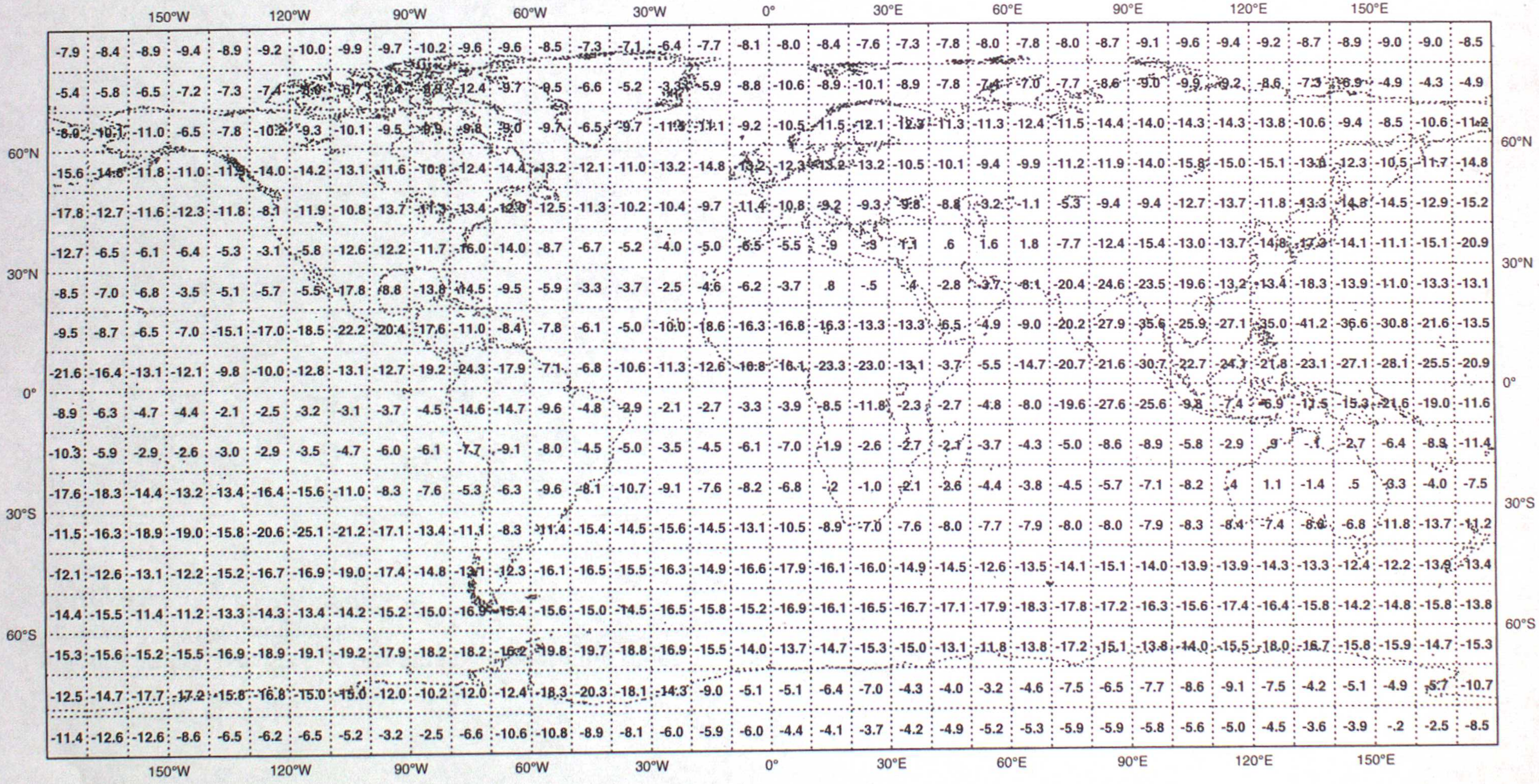

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4
.4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .4
.3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .4
.4 .4 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .4
.3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .6 .6 .6 .6 .6 .5 .5 .6 .5 .6 .6 .5 .6 .5
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .5 .5 .5 .5 .5 .6 .5 .5 .5 .6 .6 .6 .7 .7 .7 .7 .7 .7 .7 .7 .7 .7 .6 .6 .5
.4 .4 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4
.4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .4 .4 .4 .4 .4

Figure 40. ATOVS mean daily count. AUGUST 2004
NOAA16, using all observations
Global average number of observations in 24 hours = 574513



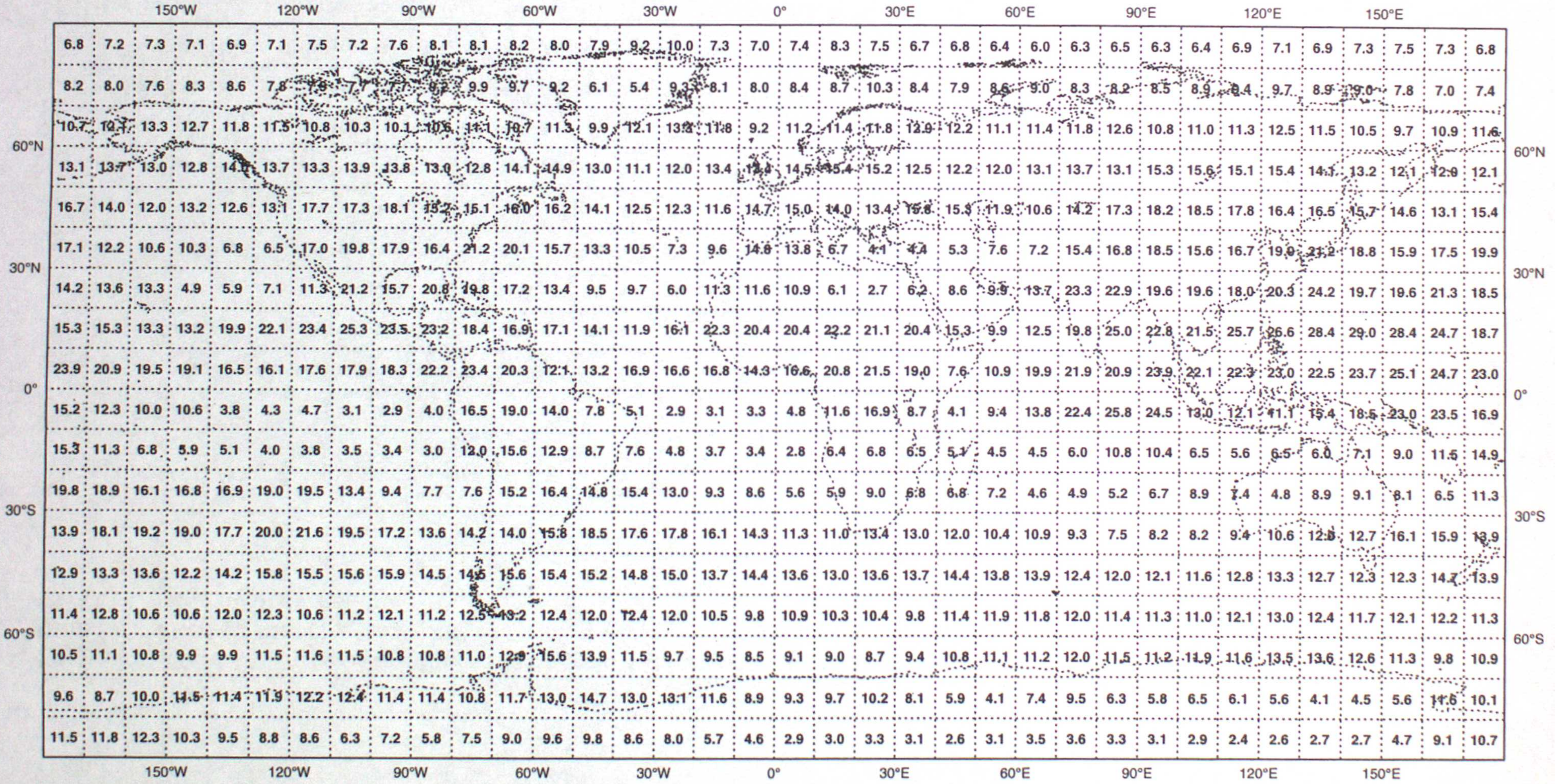
399	410	420	429	438	443	440	443	444	444	425	442	442	437	423	418	419	420	410	394	377	372	360	351	338	333	334	331	334	334	341	348	358	370	376	388
1159	1223	1265	1277	1287	1291	1298	1315	1306	1296	1303	1288	1217	975	941	1282	1307	1280	1221	1149	1092	1045	1032	1028	1030	1046	1055	1055	1040	1019	1008	994	996	1019	1045	1093
998	1048	1144	1169	1172	1174	1161	1162	1148	1129	1084	1077	1097	1033	1082	1138	1135	1095	1001	867	800	841	942	1037	1092	1119	1117	1105	1084	1054	1034	974	884	793	754	796
733	868	984	1066	1112	1096	993	902	933	1006	1029	1034	1045	1052	1057	1056	1052	1098	860	704	699	845	1013	1080	1068	1051	1034	1029	1032	1034	1009	931	806	713	654	653
667	740	932	1038	1052	1064	1029	992	983	984	1015	1037	1025	1030	1035	1029	1022	940	759	644	733	928	1052	1076	1078	1065	1021	1010	1013	1028	1038	993	969	916	752	660
942	969	1030	1016	1048	1031	972	1005	956	970	1018	999	1031	1021	1029	1037	989	924	692	617	820	918	1051	1072	1054	1073	991	998	1019	1006	1047	985	962	970	793	827
979	1034	1061	1015	1088	1068	991	1030	949	962	998	985	1044	1008	1020	1033	958	885	634	625	884	953	1052	1057	1008	1050	955	1002	1048	1002	1046	975	961	1008	806	812
917	1029	1056	1014	1070	1035	1007	1047	948	971	1001	984	1031	986	1015	1033	933	846	601	664	974	1009	1042	1058	1024	1072	984	995	1056	1022	1033	981	962	1013	856	755
859	1037	1056	1031	1019	980	1025	1040	955	994	998	977	1026	1001	1015	1023	939	782	595	737	1003	1044	1030	1051	1049	1064	1008	988	1043	1050	1013	983	969	995	942	735
805	984	968	910	909	967	1024	955	936	1017	1012	1002	989	1002	1008	999	909	668	606	799	1005	1045	897	990	1039	1027	1014	985	1018	1050	983	994	988	977	975	720
759	1004	1014	1058	970	976	986	920	959	1005	1003	1018	943	960	973	887	835	599	634	874	1007	1049	950	938	998	882	949	945	929	991	949	974	963	943	998	705
698	938	1016	1089	1027	1025	1056	946	954	938	939	1028	942	1001	1003	909	753	497	623	892	1005	1039	974	995	982	829	906	873	888	866	799	821	825	927	954	709
713	867	1001	1068	990	1027	1044	943	949	966	975	1034	945	984	981	896	713	525	707	952	1028	1063	1028	1014	1046	944	978	984	964	981	947	993	1001	989	956	794
738	803	925	966	988	986	922	930	961	976	1082	1009	963	980	979	877	682	621	826	1005	1034	1062	1059	1033	1042	1029	1026	1021	1020	994	1001	1018	1011	990	921	878
802	785	876	993	1014	1001	968	961	998	1013	1036	1040	1029	1012	957	825	697	737	907	1046	1090	1081	1070	1066	1071	1076	1078	1064	1028	1036	1025	1040	1048	1027	1026	937
930	871	875	949	1022	1093	1120	1122	1124	1107	1110	971	1007	965	904	809	835	889	994	1098	1109	1138	1109	1021	1063	1067	1040	973	940	972	997	1005	1026	1034	1044	996
906	888	890	852	779	737	760	841	795	745	697	603	717	794	850	803	862	751	608	532	560	584	377	341	804	863	605	332	388	512	531	840	1046	1047	768	892
200	225	199	202	207	235	237	192	108	179	228	210	197	218	268	251	220	192	172	180	185	158	86	52	51	57	73	99	155	201	277	326	335	291	256	203

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS8 (Surface)
NOAA16, using all observations



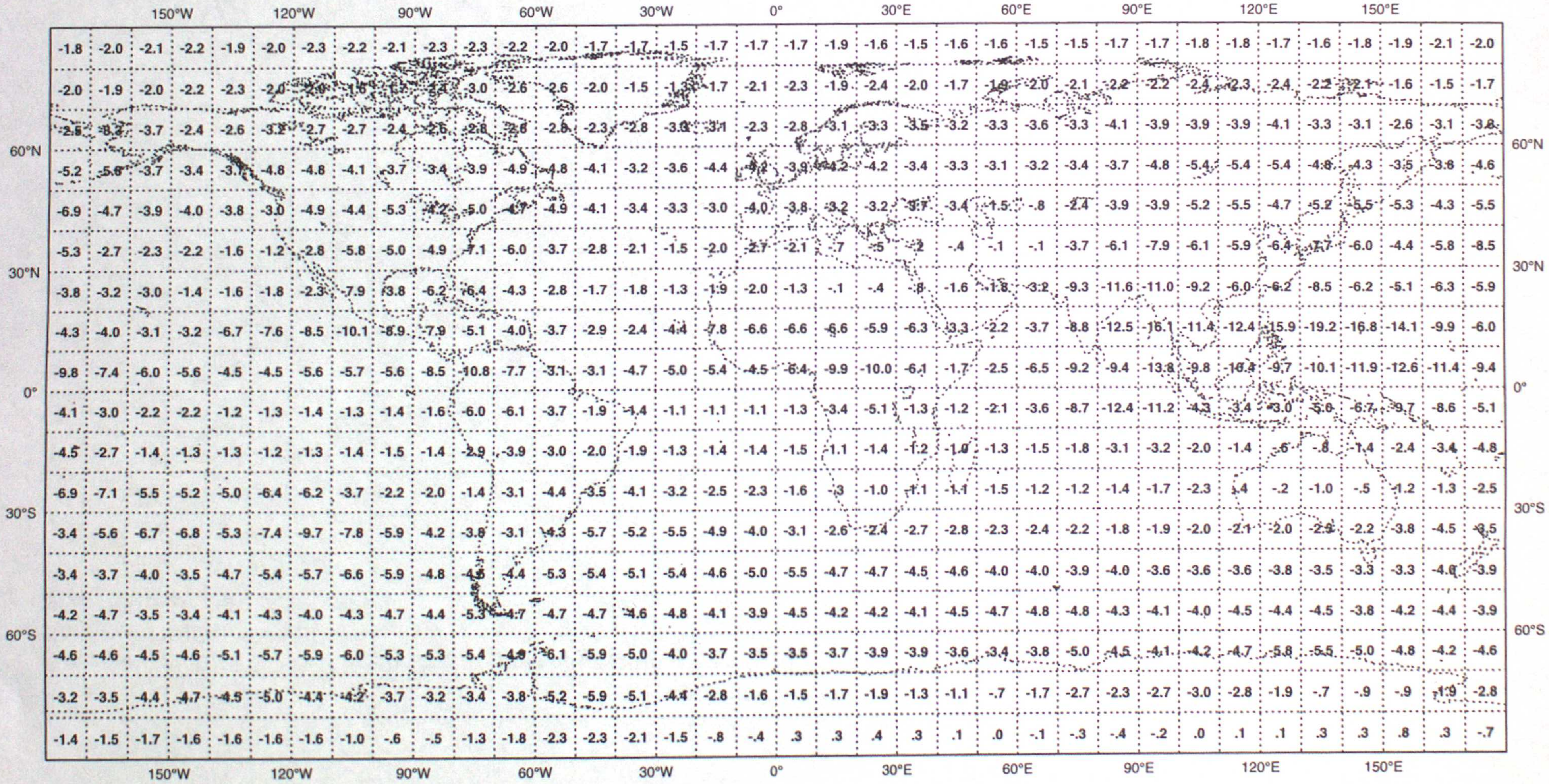
-7.9	-8.4	-8.9	-9.4	-8.9	-9.2	-10.0	-9.9	-9.7	-10.2	-9.6	-9.6	-8.5	-7.3	-7.1	-6.4	-7.7	-8.1	-8.0	-8.4	-7.6	-7.3	-7.8	-8.0	-7.8	-8.0	-8.7	-9.1	-9.6	-9.4	-9.2	-8.7	-8.9	-9.0	-9.0	-8.5
-5.4	-5.8	-6.5	-7.2	-7.3	-7.4	-8.0	-6.7	-7.4	-8.9	-12.4	-9.7	-9.5	-6.6	-5.2	-3.3	-5.9	-8.8	-10.6	-8.9	-10.1	-8.9	-7.8	-7.4	-7.0	-7.7	-8.6	-9.0	-9.9	-9.2	-8.6	-7.3	-6.9	-4.9	-4.3	-4.9
-8.9	-10.1	-11.0	-6.5	-7.8	-10.2	-9.3	-10.1	-9.5	-9.9	-9.8	-9.0	-9.7	-6.5	-9.7	-11.8	-11.1	-9.2	-10.5	-11.5	-12.1	-12.3	-11.3	-11.3	-12.4	-11.5	-14.4	-14.0	-14.3	-14.3	-13.8	-10.6	-9.4	-8.5	-10.6	-11.2
-15.6	-14.6	-11.8	-11.0	-11.5	-14.0	-14.2	-13.1	-11.6	-10.8	-12.4	-14.4	-13.2	-12.1	-11.0	-13.2	-14.8	-13.2	-12.3	-13.2	-13.2	-10.5	-10.1	-9.4	-9.9	-11.2	-11.9	-14.0	-15.8	-15.0	-15.1	-13.0	-12.3	-10.5	-11.7	-14.8
-17.8	-12.7	-11.6	-12.3	-11.8	-8.1	-11.9	-10.8	-13.7	-11.3	-13.4	-12.0	-12.5	-11.3	-10.2	-10.4	-9.7	-11.4	-10.8	-9.2	-9.3	-9.8	-8.8	-3.2	-1.1	-5.3	-9.4	-9.4	-12.7	-13.7	-11.8	-13.3	-14.8	-14.5	-12.9	-15.2
-12.7	-6.5	-6.1	-6.4	-5.3	-3.1	-5.8	-12.6	-12.2	-11.7	-16.0	-14.0	-8.7	-6.7	-5.2	-4.0	-5.0	-6.5	-5.5	-.9	-.3	1.1	.6	1.6	1.8	-7.7	-12.4	-15.4	-13.0	-13.7	-14.8	-17.3	-14.1	-11.1	-15.1	-20.9
-8.5	-7.0	-6.8	-3.5	-5.1	-5.7	-5.5	-17.8	-8.8	-13.8	-14.5	-9.5	-5.9	-3.3	-3.7	-2.5	-4.6	-6.2	-3.7	.8	-.5	-.4	-2.8	-3.7	-8.1	-20.4	-24.6	-23.5	-19.6	-13.2	-13.4	-18.3	-13.9	-11.0	-13.3	-13.1
-9.5	-8.7	-6.5	-7.0	-15.1	-17.0	-18.5	-22.2	-20.4	-17.6	-11.0	-8.4	-7.8	-6.1	-5.0	-10.0	-18.6	-16.3	-16.8	-16.3	-13.3	-13.3	-6.5	-4.9	-9.0	-20.2	-27.9	-35.6	-25.9	-27.1	-35.0	-41.2	-36.6	-30.8	-21.6	-13.5
-21.6	-16.4	-13.1	-12.1	-9.8	-10.0	-12.8	-13.1	-12.7	-19.2	-24.3	-17.9	-7.1	-6.8	-10.6	-11.3	-12.6	-16.8	-16.1	-23.3	-23.0	-13.1	-3.7	-5.5	-14.7	-20.7	-21.6	-30.7	-22.7	-24.1	-21.8	-23.1	-27.1	-28.1	-25.5	-20.9
-8.9	-6.3	-4.7	-4.4	-2.1	-2.5	-3.2	-3.1	-3.7	-4.5	-14.6	-14.7	-9.6	-4.8	-2.9	-2.1	-2.7	-3.3	-3.9	-8.5	-11.8	-2.3	-2.7	-4.8	-8.0	-19.6	-27.6	-25.6	-9.8	-7.4	-6.9	-17.5	-15.3	-21.6	-19.0	-11.6
-10.3	-5.9	-2.9	-2.6	-3.0	-2.9	-3.5	-4.7	-6.0	-6.1	-7.7	-9.1	-8.0	-4.5	-5.0	-3.5	-4.5	-6.1	-7.0	-1.9	-2.6	-2.7	-2.1	-3.7	-4.3	-5.0	-8.6	-8.9	-5.8	-2.9	.9	-.1	-2.7	-6.4	-8.8	-11.4
-17.6	-18.3	-14.4	-13.2	-13.4	-16.4	-15.6	-11.0	-8.3	-7.6	-5.3	-6.3	-9.6	-8.1	-10.7	-9.1	-7.6	-8.2	-6.8	-.2	-1.0	-2.1	-2.6	-4.4	-3.8	-4.5	-5.7	-7.1	-8.2	.4	1.1	-1.4	.5	-3.3	-4.0	-7.5
-11.5	-16.3	-18.9	-19.0	-15.8	-20.6	-25.1	-21.2	-17.1	-13.4	-11.1	-8.3	-11.4	-15.4	-14.5	-15.6	-14.5	-13.1	-10.5	-8.9	-7.0	-7.6	-8.0	-7.7	-7.9	-8.0	-8.0	-7.9	-8.3	-8.4	-7.4	-8.6	-6.8	-11.8	-13.7	-11.2
-12.1	-12.6	-13.1	-12.2	-15.2	-16.7	-16.9	-19.0	-17.4	-14.8	-13.1	-12.3	-16.1	-16.5	-15.5	-16.3	-14.9	-16.6	-17.9	-16.1	-16.0	-14.9	-14.5	-12.6	-13.5	-14.1	-15.1	-14.0	-13.9	-13.9	-14.3	-13.3	-12.4	-12.2	-13.9	-13.4
-14.4	-15.5	-11.4	-11.2	-13.3	-14.3	-13.4	-14.2	-15.2	-15.0	-16.9	-15.4	-15.6	-15.0	-14.5	-16.5	-15.8	-15.2	-16.9	-16.1	-16.5	-16.7	-17.1	-17.9	-18.3	-17.8	-17.2	-16.3	-15.6	-17.4	-16.4	-15.8	-14.2	-14.8	-15.8	-13.8
-15.3	-15.6	-15.2	-15.5	-16.9	-18.9	-19.1	-19.2	-17.9	-18.2	-18.2	-16.2	-19.8	-19.7	-18.8	-16.9	-15.5	-14.0	-13.7	-14.7	-15.3	-15.0	-13.1	-11.8	-13.8	-17.2	-15.1	-13.8	-14.0	-15.5	-18.0	-16.7	-15.8	-15.9	-14.7	-15.3
-12.5	-14.7	-17.7	-17.2	-15.8	-16.8	-15.0	-15.0	-12.0	-10.2	-12.0	-12.4	-18.3	-20.3	-18.1	-14.3	-9.0	-5.1	-5.1	-6.4	-7.0	-4.3	-4.0	-3.2	-4.6	-7.5	-6.5	-7.7	-8.6	-9.1	-7.5	-4.2	-5.1	-4.9	-5.7	-10.7
-11.4	-12.6	-12.6	-8.6	-6.5	-6.2	-6.5	-5.2	-3.2	-2.5	-6.6	-10.6	-10.8	-8.9	-8.1	-6.0	-5.9	-6.0	-4.4	-4.1	-3.7	-4.2	-4.9	-5.2	-5.3	-5.9	-5.9	-5.8	-5.6	-5.0	-4.5	-3.6	-3.9	-.2	-2.5	-8.5

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS8 (Surface)
NOAA16, using all observations



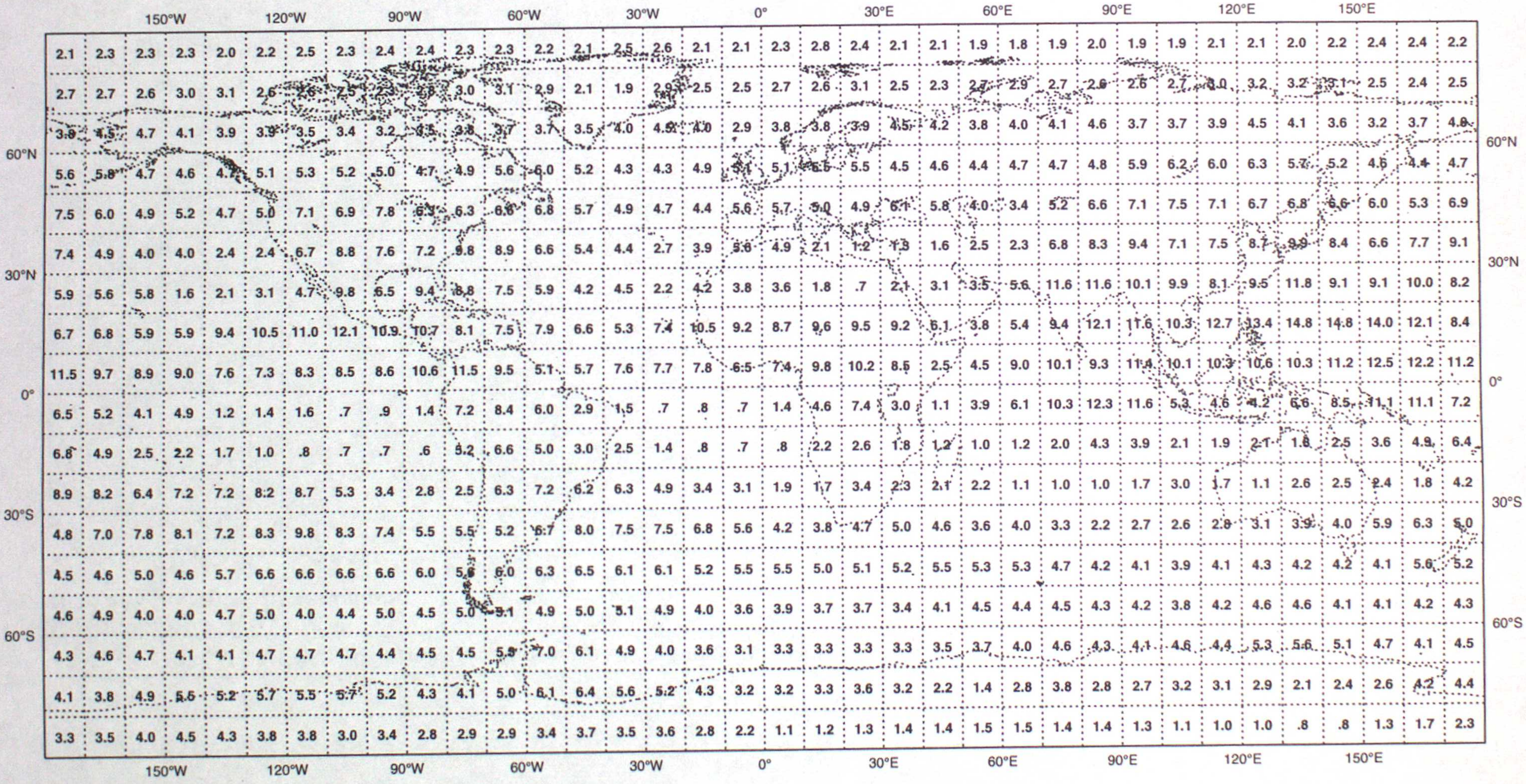
6.8	7.2	7.3	7.1	6.9	7.1	7.5	7.2	7.6	8.1	8.1	8.2	8.0	7.9	9.2	10.0	7.3	7.0	7.4	8.3	7.5	6.7	6.8	6.4	6.0	6.3	6.5	6.3	6.4	6.9	7.1	6.9	7.3	7.5	7.3	6.8
8.2	8.0	7.6	8.3	8.6	7.8	7.9	7.7	7.7	9.2	9.9	9.7	9.2	6.1	5.4	9.3	8.1	8.0	8.4	8.7	10.3	8.4	7.9	8.6	9.0	8.3	8.2	8.5	8.9	8.4	9.7	8.9	9.0	7.8	7.0	7.4
10.7	10.7	13.3	12.7	11.8	11.5	10.8	10.3	10.1	10.6	11.1	10.7	11.3	9.9	12.1	13.8	11.8	9.2	11.2	11.4	11.8	12.9	12.2	11.1	11.4	11.8	12.6	10.8	11.0	11.3	12.5	11.5	10.5	9.7	10.9	11.6
13.1	13.7	13.0	12.8	14.0	13.7	13.3	13.9	13.8	13.0	12.8	14.1	14.9	13.0	11.1	12.0	13.4	13.4	14.5	15.4	15.2	12.5	12.2	12.0	13.1	13.7	13.1	15.3	15.6	15.1	15.4	14.1	13.2	12.1	12.9	12.1
16.7	14.0	12.0	13.2	12.6	13.1	17.7	17.3	18.1	15.2	15.1	16.0	16.2	14.1	12.5	12.3	11.6	14.7	15.0	14.0	13.4	15.8	15.3	11.9	10.6	14.2	17.3	18.2	18.5	17.8	16.4	16.5	15.7	14.6	13.1	15.4
17.1	12.2	10.6	10.3	6.8	6.5	17.0	19.8	17.9	16.4	21.2	20.1	15.7	13.3	10.5	7.3	9.6	14.8	13.8	6.7	4.1	4.4	5.3	7.6	7.2	15.4	16.8	18.5	15.6	16.7	19.0	21.2	18.8	15.9	17.5	19.9
14.2	13.6	13.3	4.9	5.9	7.1	11.3	21.2	15.7	20.8	19.8	17.2	13.4	9.5	9.7	6.0	11.3	11.6	10.9	6.1	2.7	6.2	8.6	9.9	13.7	23.3	22.9	19.6	19.6	18.0	20.3	24.2	19.7	19.6	21.3	18.5
15.3	15.3	13.3	13.2	19.9	22.1	23.4	25.3	23.5	23.2	18.4	16.9	17.1	14.1	11.9	16.1	22.3	20.4	20.4	22.2	21.1	20.4	15.3	9.9	12.5	19.8	25.0	22.8	21.5	25.7	26.6	28.4	29.0	28.4	24.7	18.7
23.9	20.9	19.5	19.1	16.5	16.1	17.6	17.9	18.3	22.2	23.4	20.3	12.1	13.2	16.9	16.6	16.8	14.3	16.6	20.8	21.5	19.0	7.6	10.9	19.9	21.9	20.9	23.9	22.1	22.3	23.0	22.5	23.7	25.1	24.7	23.0
15.2	12.3	10.0	10.6	3.8	4.3	4.7	3.1	2.9	4.0	16.5	19.0	14.0	7.8	5.1	2.9	3.1	3.3	4.8	11.6	16.9	8.7	4.1	9.4	13.8	22.4	25.8	24.5	13.0	12.1	11.1	15.4	18.5	23.0	23.5	16.9
15.3	11.3	6.8	5.9	5.1	4.0	3.8	3.5	3.4	3.0	12.0	15.6	12.9	8.7	7.6	4.8	3.7	3.4	2.8	6.4	6.8	6.5	5.1	4.5	4.5	6.0	10.8	10.4	6.5	5.6	6.5	6.0	7.1	9.0	11.5	14.9
19.8	18.9	16.1	16.8	16.9	19.0	19.5	13.4	9.4	7.7	7.6	15.2	16.4	14.8	15.4	13.0	9.3	8.6	5.6	5.9	9.0	6.8	6.8	7.2	4.6	4.9	5.2	6.7	8.9	7.4	4.8	8.9	9.1	8.1	6.5	11.3
13.9	18.1	19.2	19.0	17.7	20.0	21.6	19.5	17.2	13.6	14.2	14.0	15.8	18.5	17.6	17.8	16.1	14.3	11.3	11.0	13.4	13.0	12.0	10.4	10.9	9.3	7.5	8.2	8.2	9.4	10.6	12.8	12.7	16.1	15.9	13.9
12.9	13.3	13.6	12.2	14.2	15.8	15.5	15.6	15.9	14.5	14.5	15.6	15.4	15.2	14.8	15.0	13.7	14.4	13.6	13.0	13.6	13.7	14.4	13.8	13.9	12.4	12.0	12.1	11.6	12.8	13.3	12.7	12.3	12.3	14.7	13.9
11.4	12.8	10.6	10.6	12.0	12.3	10.6	11.2	12.1	11.2	12.5	13.2	12.4	12.0	12.4	12.0	10.5	9.8	10.9	10.3	10.4	9.8	11.4	11.9	11.8	12.0	11.4	11.3	11.0	12.1	13.0	12.4	11.7	12.1	12.2	11.3
10.5	11.1	10.8	9.9	9.9	11.5	11.6	11.5	10.8	10.8	11.0	12.9	15.6	13.9	11.5	9.7	9.5	8.5	9.1	9.0	8.7	9.4	10.8	11.1	11.2	12.0	11.5	11.2	11.9	11.6	13.5	13.6	12.6	11.3	9.8	10.9
9.6	8.7	10.0	14.5	11.4	11.9	12.2	12.4	11.4	11.4	10.8	11.7	13.0	14.7	13.0	13.1	11.6	8.9	9.3	9.7	10.2	8.1	5.9	4.1	7.4	9.5	6.3	5.8	6.5	6.1	5.6	4.1	4.5	5.6	11.6	10.1
11.5	11.8	12.3	10.3	9.5	8.8	8.6	6.3	7.2	5.8	7.5	9.0	9.6	9.8	8.6	8.0	5.7	4.6	2.9	3.0	3.3	3.1	2.6	3.1	3.5	3.6	3.3	3.1	2.9	2.4	2.6	2.7	2.7	4.7	9.1	10.7

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



-1.8	-2.0	-2.1	-2.2	-1.9	-2.0	-2.3	-2.2	-2.1	-2.3	-2.3	-2.2	-2.0	-1.7	-1.7	-1.5	-1.7	-1.7	-1.7	-1.9	-1.6	-1.5	-1.6	-1.6	-1.5	-1.5	-1.7	-1.7	-1.8	-1.8	-1.7	-1.6	-1.8	-1.9	-2.1	-2.0
-2.0	-1.9	-2.0	-2.2	-2.3	-2.0	-2.0	-1.6	-1.7	-2.4	-3.0	-2.6	-2.6	-2.0	-1.5	-1.3	-1.7	-2.1	-2.3	-1.9	-2.4	-2.0	-1.7	-1.9	-2.0	-2.1	-2.2	-2.2	-2.4	-2.3	-2.4	-2.2	-2.1	-1.6	-1.5	-1.7
-2.5	-3.2	-3.7	-2.4	-2.6	-3.2	-2.7	-2.7	-2.4	-2.6	-2.8	-2.6	-2.8	-2.3	-2.8	-3.0	-3.1	-2.3	-2.8	-3.1	-3.3	-3.5	-3.2	-3.3	-3.6	-3.3	-4.1	-3.9	-3.9	-3.9	-4.1	-3.3	-3.1	-2.6	-3.1	-3.8
-5.2	-5.6	-3.7	-3.4	-3.1	-4.8	-4.8	-4.1	-3.7	-3.4	-3.9	-4.9	-4.8	-4.1	-3.2	-3.6	-4.4	-4.2	-3.9	-4.2	-4.2	-3.4	-3.3	-3.1	-3.2	-3.4	-3.7	-4.8	-5.4	-5.4	-5.4	-4.8	-4.3	-3.5	-3.8	-4.6
-6.9	-4.7	-3.9	-4.0	-3.8	-3.0	-4.9	-4.4	-5.3	-4.2	-5.0	-4.7	-4.9	-4.1	-3.4	-3.3	-3.0	-4.0	-3.8	-3.2	-3.2	-3.7	-3.4	-1.5	-.8	-2.4	-3.9	-3.9	-5.2	-5.5	-4.7	-5.2	-5.5	-5.3	-4.3	-5.5
-5.3	-2.7	-2.3	-2.2	-1.6	-1.2	-2.8	-5.8	-5.0	-4.9	-7.1	-6.0	-3.7	-2.8	-2.1	-1.5	-2.0	-2.7	-2.1	-.7	-.5	-.2	-.4	-.1	-.1	-3.7	-6.1	-7.9	-6.1	-5.9	-6.4	-7.7	-6.0	-4.4	-5.8	-8.5
-3.8	-3.2	-3.0	-1.4	-1.6	-1.8	-2.3	-7.9	-3.8	-6.2	-6.4	-4.3	-2.8	-1.7	-1.8	-1.3	-1.9	-2.0	-1.3	-.1	-.4	-.8	-1.6	-1.8	-3.2	-9.3	-11.6	-11.0	-9.2	-6.0	-6.2	-8.5	-6.2	-5.1	-6.3	-5.9
-4.3	-4.0	-3.1	-3.2	-6.7	-7.6	-8.5	-10.1	-8.9	-7.9	-5.1	-4.0	-3.7	-2.9	-2.4	-4.4	-7.8	-6.6	-6.6	-6.6	-5.9	-6.3	-3.3	-2.2	-3.7	-8.8	-12.5	-16.1	-11.4	-12.4	-15.9	-19.2	-16.8	-14.1	-9.9	-6.0
-9.8	-7.4	-6.0	-5.6	-4.5	-4.5	-5.6	-5.7	-5.6	-8.5	-10.8	-7.7	-3.1	-3.1	-4.7	-5.0	-5.4	-4.5	-6.4	-9.9	-10.0	-6.1	-1.7	-2.5	-6.5	-9.2	-9.4	-13.8	-9.8	-10.4	-9.7	-10.1	-11.9	-12.6	-11.4	-9.4
-4.1	-3.0	-2.2	-2.2	-1.2	-1.3	-1.4	-1.3	-1.4	-1.6	-6.0	-6.1	-3.7	-1.9	-1.4	-1.1	-1.1	-1.1	-1.3	-3.4	-5.1	-1.3	-1.2	-2.1	-3.6	-8.7	-12.4	-11.2	-4.3	-3.4	-3.0	-5.0	-6.7	-9.7	-8.6	-5.1
-4.5	-2.7	-1.4	-1.3	-1.3	-1.2	-1.3	-1.4	-1.5	-1.4	-2.9	-3.9	-3.0	-2.0	-1.9	-1.3	-1.4	-1.4	-1.5	-1.1	-1.4	-1.2	-1.0	-1.3	-1.5	-1.8	-3.1	-3.2	-2.0	-1.4	-.6	-.8	-1.4	-2.4	-3.4	-4.8
-6.9	-7.1	-5.5	-5.2	-5.0	-6.4	-6.2	-3.7	-2.2	-2.0	-1.4	-3.1	-4.4	-3.5	-4.1	-3.2	-2.5	-2.3	-1.6	-.3	-1.0	-1.1	-1.1	-1.5	-1.2	-1.2	-1.4	-1.7	-2.3	.4	-.2	-1.0	-.5	-1.2	-1.3	-2.5
-3.4	-5.6	-6.7	-6.8	-5.3	-7.4	-9.7	-7.8	-5.9	-4.2	-3.8	-3.1	-4.3	-5.7	-5.2	-5.5	-4.9	-4.0	-3.1	-2.6	-2.4	-2.7	-2.8	-2.3	-2.4	-2.2	-1.8	-1.9	-2.0	-2.1	-2.0	-2.5	-2.2	-3.8	-4.5	-3.5
-3.4	-3.7	-4.0	-3.5	-4.7	-5.4	-5.7	-6.6	-5.9	-4.8	-4.5	-4.4	-5.3	-5.4	-5.1	-5.4	-4.6	-5.0	-5.5	-4.7	-4.7	-4.5	-4.6	-4.0	-4.0	-3.9	-4.0	-3.6	-3.6	-3.6	-3.8	-3.5	-3.3	-3.3	-4.6	-3.9
-4.2	-4.7	-3.5	-3.4	-4.1	-4.3	-4.0	-4.3	-4.7	-4.4	-5.3	-4.7	-4.7	-4.7	-4.6	-4.8	-4.1	-3.9	-4.5	-4.2	-4.2	-4.1	-4.5	-4.7	-4.8	-4.8	-4.3	-4.1	-4.0	-4.5	-4.4	-4.5	-3.8	-4.2	-4.4	-3.9
-4.6	-4.6	-4.5	-4.6	-5.1	-5.7	-5.9	-6.0	-5.3	-5.3	-5.4	-4.9	-6.1	-5.9	-5.0	-4.0	-3.7	-3.5	-3.5	-3.7	-3.9	-3.9	-3.6	-3.4	-3.8	-5.0	-4.5	-4.1	-4.2	-4.7	-5.8	-5.5	-5.0	-4.8	-4.2	-4.6
-3.2	-3.5	-4.4	-4.7	-4.5	-5.0	-4.4	-4.2	-3.7	-3.2	-3.4	-3.8	-5.2	-5.9	-5.1	-4.4	-2.8	-1.6	-1.5	-1.7	-1.9	-1.3	-1.1	-.7	-1.7	-2.7	-2.3	-2.7	-3.0	-2.8	-1.9	-.7	-.9	-.9	-1.9	-2.8
-1.4	-1.5	-1.7	-1.6	-1.6	-1.6	-1.6	-1.0	-.6	-.5	-1.3	-1.8	-2.3	-2.3	-2.1	-1.5	-.8	-.4	.3	.3	.4	.3	.1	.0	-.1	-.3	-.4	-.2	.0	.1	.1	.3	.3	.8	.3	-.7

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



2.1	2.3	2.3	2.3	2.0	2.2	2.5	2.3	2.4	2.4	2.3	2.3	2.2	2.1	2.5	2.6	2.1	2.1	2.3	2.8	2.4	2.1	2.1	1.9	1.8	1.9	2.0	1.9	1.9	2.1	2.1	2.0	2.2	2.4	2.4	2.2
2.7	2.7	2.6	3.0	3.1	2.6	2.6	2.5	2.3	2.8	3.0	3.1	2.9	2.1	1.9	2.9	2.5	2.5	2.7	2.6	3.1	2.5	2.3	2.7	2.9	2.7	2.6	2.6	2.7	3.0	3.2	3.2	3.1	2.5	2.4	2.5
3.9	4.5	4.7	4.1	3.9	3.9	3.5	3.4	3.2	4.5	3.8	3.7	3.7	3.5	4.0	4.5	4.0	2.9	3.8	3.8	3.9	4.5	4.2	3.8	4.0	4.1	4.6	3.7	3.7	3.9	4.5	4.1	3.6	3.2	3.7	4.8
5.6	5.8	4.7	4.6	4.7	5.1	5.3	5.2	5.0	4.7	4.9	5.6	6.0	5.2	4.3	4.3	4.9	5.1	5.1	6.5	5.5	4.5	4.6	4.4	4.7	4.7	4.8	5.9	6.2	6.0	6.3	5.7	5.2	4.6	4.4	4.7
7.5	6.0	4.9	5.2	4.7	5.0	7.1	6.9	7.8	6.3	6.3	6.6	6.8	5.7	4.9	4.7	4.4	5.6	5.7	5.0	4.9	6.1	5.8	4.0	3.4	5.2	6.6	7.1	7.5	7.1	6.7	6.8	6.6	6.0	5.3	6.9
7.4	4.9	4.0	4.0	2.4	2.4	6.7	8.8	7.6	7.2	9.8	8.9	6.6	5.4	4.4	2.7	3.9	5.6	4.9	2.1	1.2	1.3	1.6	2.5	2.3	6.8	8.3	9.4	7.1	7.5	8.7	9.9	8.4	6.6	7.7	9.1
5.9	5.6	5.8	1.6	2.1	3.1	4.7	9.8	6.5	9.4	8.8	7.5	5.9	4.2	4.5	2.2	4.2	3.8	3.6	1.8	.7	2.1	3.1	3.5	5.6	11.6	11.6	10.1	9.9	8.1	9.5	11.8	9.1	9.1	10.0	8.2
6.7	6.8	5.9	5.9	9.4	10.5	11.0	12.1	10.9	10.7	8.1	7.5	7.9	6.6	5.3	7.4	10.5	9.2	8.7	9.6	9.5	9.2	6.1	3.8	5.4	9.4	12.1	11.6	10.3	12.7	13.4	14.8	14.8	14.0	12.1	8.4
11.5	9.7	8.9	9.0	7.6	7.3	8.3	8.5	8.6	10.6	11.5	9.5	5.1	5.7	7.6	7.7	7.8	6.5	7.4	9.8	10.2	8.5	2.5	4.5	9.0	10.1	9.3	11.4	10.1	10.3	10.6	10.3	11.2	12.5	12.2	11.2
6.5	5.2	4.1	4.9	1.2	1.4	1.6	.7	.9	1.4	7.2	8.4	6.0	2.9	1.5	.7	.8	.7	1.4	4.6	7.4	3.0	1.1	3.9	6.1	10.3	12.3	11.6	5.3	4.6	4.2	6.6	8.5	11.1	11.1	7.2
6.8	4.9	2.5	2.2	1.7	1.0	.8	.7	.7	.6	5.2	6.6	5.0	3.0	2.5	1.4	.8	.7	.8	2.2	2.6	1.8	1.2	1.0	1.2	2.0	4.3	3.9	2.1	1.9	2.1	1.8	2.5	3.6	4.9	6.4
8.9	8.2	6.4	7.2	7.2	8.2	8.7	5.3	3.4	2.8	2.5	6.3	7.2	6.2	6.3	4.9	3.4	3.1	1.9	1.7	3.4	2.3	2.1	2.2	1.1	1.0	1.0	1.7	3.0	1.7	1.1	2.6	2.5	2.4	1.8	4.2
4.8	7.0	7.8	8.1	7.2	8.3	9.8	8.3	7.4	5.5	5.5	5.2	6.7	8.0	7.5	7.5	6.8	5.6	4.2	3.8	4.7	5.0	4.6	3.6	4.0	3.3	2.2	2.7	2.6	2.8	3.1	3.9	4.0	5.9	6.3	5.0
4.5	4.6	5.0	4.6	5.7	6.6	6.6	6.6	6.6	6.0	5.6	6.0	6.3	6.5	6.1	6.1	5.2	5.5	5.5	5.0	5.1	5.2	5.5	5.3	5.3	4.7	4.2	4.1	3.9	4.1	4.3	4.2	4.2	4.1	5.6	5.2
4.6	4.9	4.0	4.0	4.7	5.0	4.0	4.4	5.0	4.5	5.0	5.1	4.9	5.0	5.1	4.9	4.0	3.6	3.9	3.7	3.7	3.4	4.1	4.5	4.4	4.5	4.3	4.2	3.8	4.2	4.6	4.6	4.1	4.1	4.2	4.3
4.3	4.6	4.7	4.1	4.1	4.7	4.7	4.7	4.4	4.5	4.5	5.5	7.0	6.1	4.9	4.0	3.6	3.1	3.3	3.3	3.3	3.3	3.5	3.7	4.0	4.6	4.3	4.1	4.6	4.4	5.3	5.6	5.1	4.7	4.1	4.5
4.1	3.8	4.9	5.5	5.2	5.7	5.5	5.7	5.2	4.3	4.1	5.0	6.1	6.4	5.6	5.2	4.3	3.2	3.2	3.3	3.6	3.2	2.2	1.4	2.8	3.8	2.8	2.7	3.2	3.1	2.9	2.1	2.4	2.6	4.2	4.4
3.3	3.5	4.0	4.5	4.3	3.8	3.8	3.0	3.4	2.8	2.9	2.9	3.4	3.7	3.5	3.6	2.8	2.2	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.4	1.4	1.3	1.1	1.0	1.0	.8	.8	1.3	1.7	2.3

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations

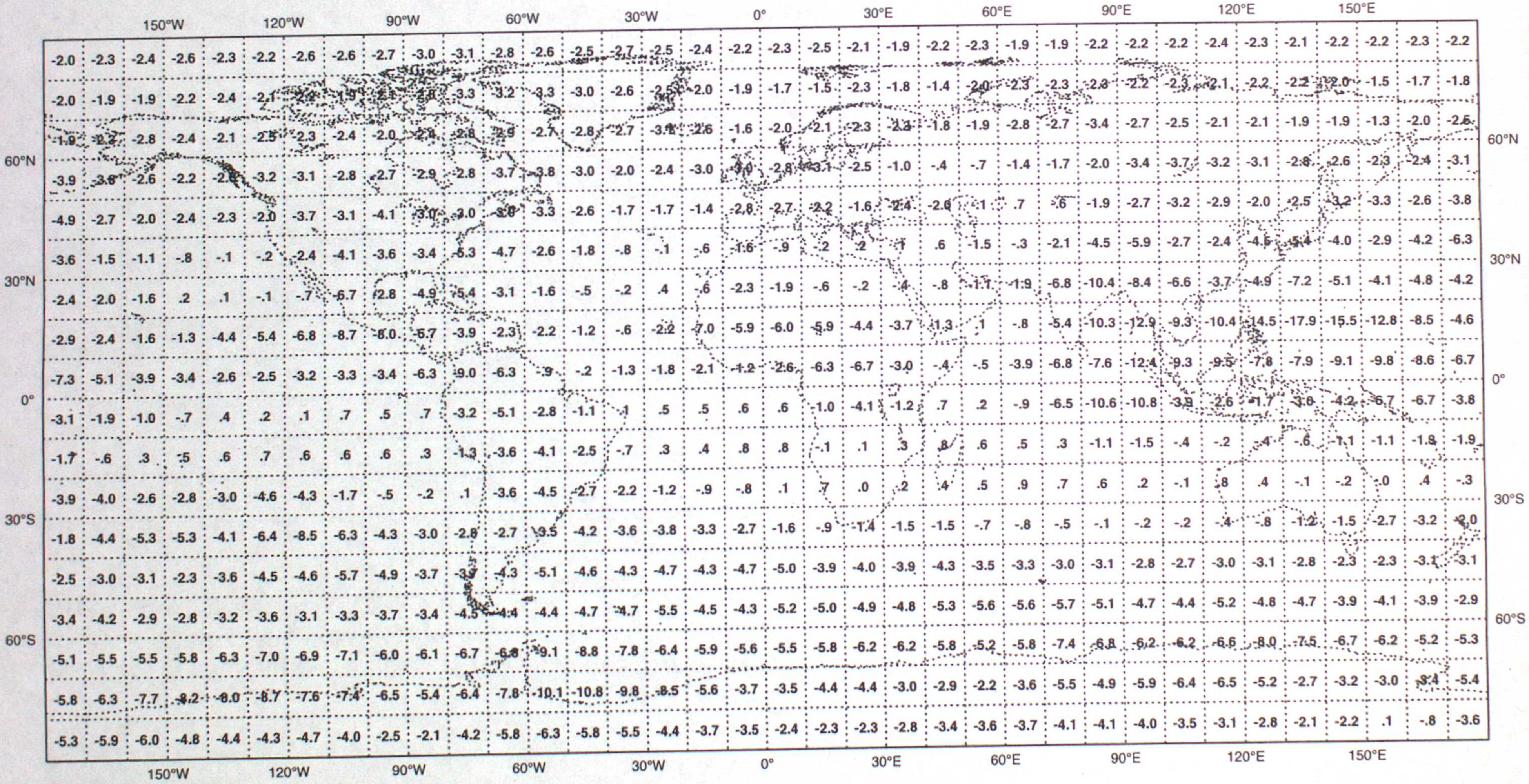
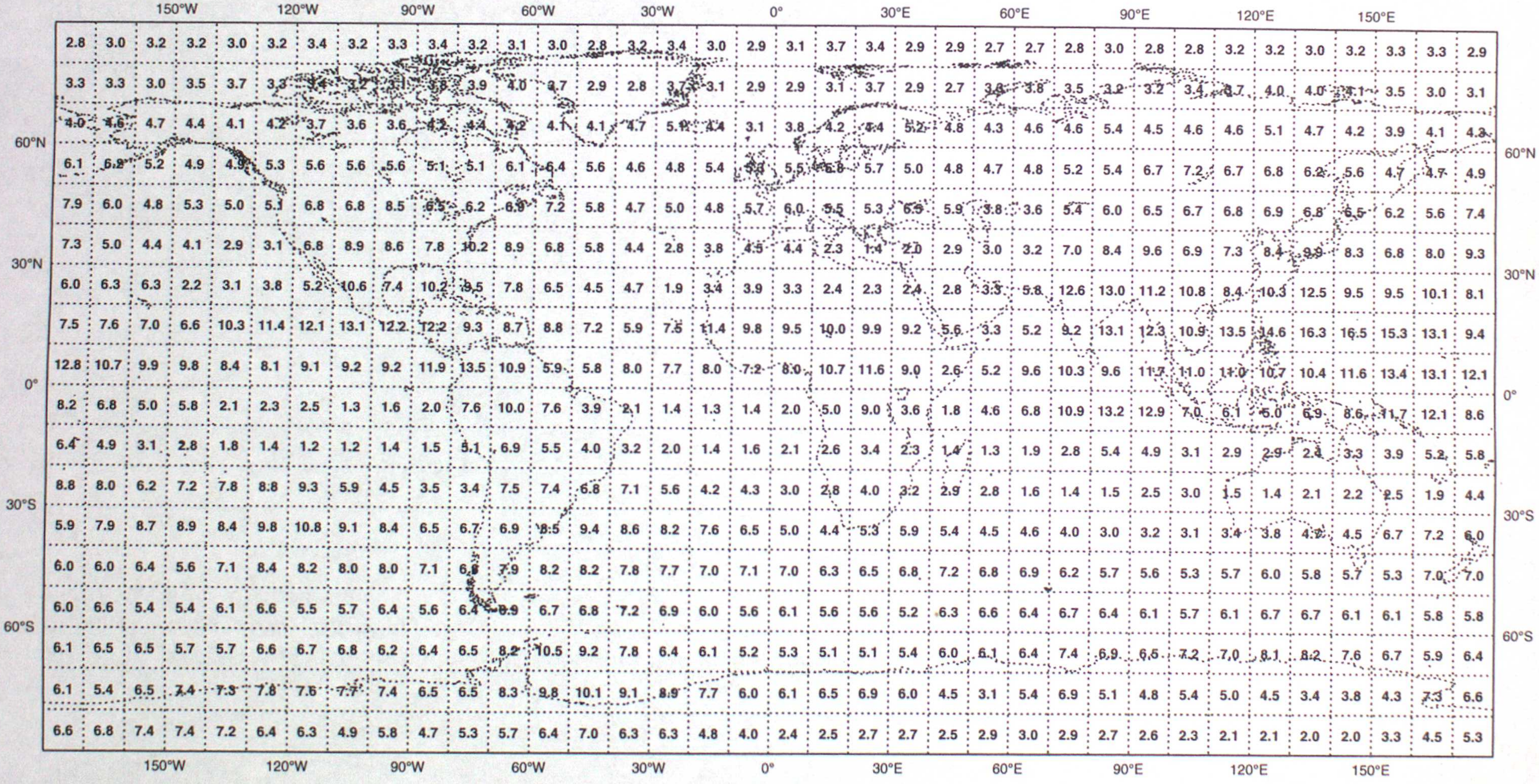

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
-2.0 -2.3 -2.4 -2.6 -2.3 -2.2 -2.6 -2.6 -2.7 -3.0 -3.1 -2.8 -2.6 -2.5 -2.7 -2.5 -2.4 -2.2 -2.3 -2.5 -2.1 -1.9 -2.2 -2.3 -1.9 -1.9 -2.2 -2.2 -2.2 -2.4 -2.3 -2.1 -2.2 -2.2 -2.3 -2.2
-2.0 -1.9 -1.9 -2.2 -2.4 -2.1 -2.2 -1.9 -2.1 -2.8 -3.3 -3.2 -3.3 -3.0 -2.6 -2.5 -2.0 -1.9 -1.7 -1.5 -2.3 -1.8 -1.4 -2.0 -2.3 -2.3 -2.8 -2.2 -2.3 -2.1 -2.2 -2.2 -2.0 -1.5 -1.7 -1.8
-1.9 -2.2 -2.8 -2.4 -2.1 -2.5 -2.3 -2.4 -2.0 -2.4 -2.8 -2.9 -2.7 -2.8 -2.7 -3.1 -2.6 -1.6 -2.0 -2.1 -2.3 -2.3 -1.8 -1.9 -2.8 -2.7 -3.4 -2.7 -2.5 -2.1 -2.1 -1.9 -1.9 -1.3 -2.0 -2.6
-3.9 -3.6 -2.6 -2.2 -2.6 -3.2 -3.1 -2.8 -2.7 -2.9 -2.8 -3.7 -3.8 -3.0 -2.0 -2.4 -3.0 -3.0 -2.8 -3.1 -2.5 -1.0 -.4 -.7 -1.4 -1.7 -2.0 -3.4 -3.7 -3.2 -3.1 -2.8 -2.6 -2.3 -2.4 -3.1
-4.9 -2.7 -2.0 -2.4 -2.3 -2.0 -3.7 -3.1 -4.1 -3.0 -3.0 -3.0 -3.3 -2.6 -1.7 -1.7 -1.4 -2.8 -2.7 -2.2 -1.6 -2.4 -2.6 -1.1 .7 -.6 -1.9 -2.7 -3.2 -2.9 -2.0 -2.5 -3.2 -3.3 -2.6 -3.8
-3.6 -1.5 -1.1 -.8 -.1 -.2 -2.4 -4.1 -3.6 -3.4 -5.3 -4.7 -2.6 -1.8 -.8 -.1 -.6 -1.6 -.9 -.2 -.2 -.1 .6 -1.5 -.3 -2.1 -4.5 -5.9 -2.7 -2.4 -4.5 -5.4 -4.0 -2.9 -4.2 -6.3
-2.4 -2.0 -1.6 .2 .1 -.1 -.7 -6.7 -2.8 -4.9 -5.4 -3.1 -1.6 -.5 -.2 .4 -.6 -2.3 -1.9 -.6 -.2 -.4 -.8 -1.1 -1.9 -6.8 -10.4 -8.4 -6.6 -3.7 -4.9 -7.2 -5.1 -4.1 -4.8 -4.2
-2.9 -2.4 -1.6 -1.3 -4.4 -5.4 -6.8 -8.7 -8.0 -6.7 -3.9 -2.3 -2.2 -1.2 -.6 -2.2 -7.0 -5.9 -6.0 -5.9 -4.4 -3.7 -1.3 .1 -.8 -5.4 -10.3 -12.9 -9.3 -10.4 -14.5 -17.9 -15.5 -12.8 -8.5 -4.6
-7.3 -5.1 -3.9 -3.4 -2.6 -2.5 -3.2 -3.3 -3.4 -6.3 -9.0 -6.3 -.9 -.2 -1.3 -1.8 -2.1 -1.2 -2.6 -6.3 -6.7 -3.0 -.4 -.5 -3.9 -6.8 -7.6 -12.4 -9.3 -9.5 -7.8 -7.9 -9.1 -9.8 -8.6 -6.7
-3.1 -1.9 -1.0 -.7 .4 .2 .1 .7 .5 .7 -3.2 -5.1 -2.8 -1.1 -.1 .5 .5 .6 .6 -1.0 -4.1 -1.2 .7 .2 -.9 -6.5 -10.6 -10.8 -3.9 -2.6 -1.7 -3.0 -4.2 -6.7 -6.7 -3.8
-1.7 -.6 .3 .5 .6 .7 .6 .6 .6 .3 -1.3 -3.6 -4.1 -2.5 -.7 .3 .4 .8 .8 -.1 .1 .3 .8 .6 .5 .3 -1.1 -1.5 -.4 -.2 -.4 -.6 -1.1 -1.1 -1.8 -1.9
-3.9 -4.0 -2.6 -2.8 -3.0 -4.6 -4.3 -1.7 -.5 -.2 .1 -3.6 -4.5 -2.7 -2.2 -1.2 -.9 -.8 .1 .7 .0 .2 .4 .5 .9 .7 .6 .2 -.1 .8 .4 -.1 -.2 .0 .4 -.3
-1.8 -4.4 -5.3 -5.3 -4.1 -6.4 -8.5 -6.3 -4.3 -3.0 -2.8 -2.7 -3.5 -4.2 -3.6 -3.8 -3.3 -2.7 -1.6 -.9 -1.4 -1.5 -1.5 -.7 -.8 -.5 -.1 -.2 -.2 -.4 -.8 -1.2 -1.5 -2.7 -3.2 -2.0
-2.5 -3.0 -3.1 -2.3 -3.6 -4.5 -4.6 -5.7 -4.9 -3.7 -3.7 -4.3 -5.1 -4.6 -4.3 -4.7 -4.3 -4.7 -5.0 -3.9 -4.0 -3.9 -4.3 -3.5 -3.3 -3.0 -3.1 -2.8 -2.7 -3.0 -3.1 -2.8 -2.3 -2.3 -3.1 -3.1
-3.4 -4.2 -2.9 -2.8 -3.2 -3.6 -3.1 -3.3 -3.7 -3.4 -4.5 -4.4 -4.4 -4.7 -4.7 -5.5 -4.5 -4.3 -5.2 -5.0 -4.9 -4.8 -5.3 -5.6 -5.6 -5.7 -5.1 -4.7 -4.4 -5.2 -4.8 -4.7 -3.9 -4.1 -3.9 -2.9
-5.1 -5.5 -5.5 -5.8 -6.3 -7.0 -6.9 -7.1 -6.0 -6.1 -6.7 -6.8 -9.1 -8.8 -7.8 -6.4 -5.9 -5.6 -5.5 -5.8 -6.2 -6.2 -5.8 -5.2 -5.8 -7.4 -6.8 -6.2 -6.2 -6.6 -8.0 -7.5 -6.7 -6.2 -5.2 -5.3
-5.8 -6.3 -7.7 -8.2 -8.0 -8.7 -7.6 -7.4 -6.5 -5.4 -6.4 -7.8 -10.1 -10.8 -9.8 -8.5 -5.6 -3.7 -3.5 -4.4 -4.4 -3.0 -2.9 -2.2 -3.6 -5.5 -4.9 -5.9 -6.4 -6.5 -5.2 -2.7 -3.2 -3.0 -3.4 -5.4
-5.3 -5.9 -6.0 -4.8 -4.4 -4.3 -4.7 -4.0 -2.5 -2.1 -4.2 -5.8 -6.3 -5.8 -5.5 -4.4 -3.7 -3.5 -2.4 -2.3 -2.3 -2.8 -3.4 -3.6 -3.7 -4.1 -4.1 -4.0 -3.5 -3.1 -2.8 -2.1 -2.2 .1 -.8 -3.6

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



2.8	3.0	3.2	3.2	3.0	3.2	3.4	3.2	3.3	3.4	3.2	3.1	3.0	2.8	3.2	3.4	3.0	2.9	3.1	3.7	3.4	2.9	2.9	2.7	2.7	2.8	3.0	2.8	2.8	3.2	3.2	3.0	3.2	3.3	3.3	2.9
3.3	3.3	3.0	3.5	3.7	3.3	3.4	3.2	3.1	3.8	3.9	4.0	3.7	2.9	2.8	3.7	3.1	2.9	2.9	3.1	3.7	2.9	2.7	3.8	3.8	3.5	3.2	3.2	3.4	3.7	4.0	4.0	4.1	3.5	3.0	3.1
4.0	4.6	4.7	4.4	4.1	4.2	3.7	3.6	3.6	4.2	4.4	4.2	4.1	4.1	4.7	5.1	4.4	3.1	3.8	4.2	4.4	5.2	4.8	4.3	4.6	4.6	5.4	4.5	4.6	4.6	5.1	4.7	4.2	3.9	4.1	4.3
6.1	6.2	5.2	4.9	4.9	5.3	5.6	5.6	5.6	5.1	5.1	6.1	6.4	5.6	4.6	4.8	5.4	5.3	5.5	5.8	5.7	5.0	4.8	4.7	4.8	5.2	5.4	6.7	7.2	6.7	6.8	6.2	5.6	4.7	4.7	4.9
7.9	6.0	4.8	5.3	5.0	5.1	6.8	6.8	8.5	6.5	6.2	6.9	7.2	5.8	4.7	5.0	4.8	5.7	6.0	5.5	5.3	6.5	5.9	3.8	3.6	5.4	6.0	6.5	6.7	6.8	6.9	6.8	6.5	6.2	5.6	7.4
7.3	5.0	4.4	4.1	2.9	3.1	6.8	8.9	8.6	7.8	10.2	8.9	6.8	5.8	4.4	2.8	3.8	4.5	4.4	2.3	1.4	2.0	2.9	3.0	3.2	7.0	8.4	9.6	6.9	7.3	8.4	9.9	8.3	6.8	8.0	9.3
6.0	6.3	6.3	2.2	3.1	3.8	5.2	10.6	7.4	10.2	9.5	7.8	6.5	4.5	4.7	1.9	3.4	3.9	3.3	2.4	2.3	2.4	2.8	3.3	5.8	12.6	13.0	11.2	10.8	8.4	10.3	12.5	9.5	9.5	10.1	8.1
7.5	7.6	7.0	6.6	10.3	11.4	12.1	13.1	12.2	12.2	9.3	8.7	8.8	7.2	5.9	7.5	11.4	9.8	9.5	10.0	9.9	9.2	5.6	3.3	5.2	9.2	13.1	12.3	10.9	13.5	14.6	16.3	16.5	15.3	13.1	9.4
12.8	10.7	9.9	9.8	8.4	8.1	9.1	9.2	9.2	11.9	13.5	10.9	5.9	5.8	8.0	7.7	8.0	7.2	8.0	10.7	11.6	9.0	2.6	5.2	9.6	10.3	9.6	11.7	11.0	11.0	10.7	10.4	11.6	13.4	13.1	12.1
8.2	6.8	5.0	5.8	2.1	2.3	2.5	1.3	1.6	2.0	7.6	10.0	7.6	3.9	2.1	1.4	1.3	1.4	2.0	5.0	9.0	3.6	1.8	4.6	6.8	10.9	13.2	12.9	7.0	6.1	5.0	6.9	8.6	11.7	12.1	8.6
6.4	4.9	3.1	2.8	1.8	1.4	1.2	1.2	1.4	1.5	5.1	6.9	5.5	4.0	3.2	2.0	1.4	1.6	2.1	2.6	3.4	2.3	1.4	1.3	1.9	2.8	5.4	4.9	3.1	2.9	2.9	2.4	3.3	3.9	5.2	5.8
8.8	8.0	6.2	7.2	7.8	8.8	9.3	5.9	4.5	3.5	3.4	7.5	7.4	6.8	7.1	5.6	4.2	4.3	3.0	2.8	4.0	3.2	2.9	2.8	1.6	1.4	1.5	2.5	3.0	1.5	1.4	2.1	2.2	2.5	1.9	4.4
5.9	7.9	8.7	8.9	8.4	9.8	10.8	9.1	8.4	6.5	6.7	6.9	8.5	9.4	8.6	8.2	7.6	6.5	5.0	4.4	5.3	5.9	5.4	4.5	4.6	4.0	3.0	3.2	3.1	3.4	3.8	4.2	4.5	6.7	7.2	6.0
6.0	6.0	6.4	5.6	7.1	8.4	8.2	8.0	8.0	7.1	6.8	7.9	8.2	8.2	7.8	7.7	7.0	7.1	7.0	6.3	6.5	6.8	7.2	6.8	6.9	6.2	5.7	5.6	5.3	5.7	6.0	5.8	5.7	5.3	7.0	7.0
6.0	6.6	5.4	5.4	6.1	6.6	5.5	5.7	6.4	5.6	6.4	6.9	6.7	6.8	7.2	6.9	6.0	5.6	6.1	5.6	5.6	5.2	6.3	6.6	6.4	6.7	6.4	6.1	5.7	6.1	6.7	6.7	6.1	6.1	5.8	5.8
6.1	6.5	6.5	5.7	5.7	6.6	6.7	6.8	6.2	6.4	6.5	8.2	10.5	9.2	7.8	6.4	6.1	5.2	5.3	5.1	5.1	5.4	6.0	6.1	6.4	7.4	6.9	6.5	7.2	7.0	8.1	8.2	7.6	6.7	5.9	6.4
6.1	5.4	6.5	7.4	7.3	7.8	7.6	7.7	7.4	6.5	6.5	8.3	9.8	10.1	9.1	8.9	7.7	6.0	6.1	6.5	6.9	6.0	4.5	3.1	5.4	6.9	5.1	4.8	5.4	5.0	4.5	3.4	3.8	4.3	7.3	6.6
6.6	6.8	7.4	7.4	7.2	6.4	6.3	4.9	5.8	4.7	5.3	5.7	6.4	7.0	6.3	6.3	4.8	4.0	2.4	2.5	2.7	2.7	2.5	2.9	3.0	2.9	2.7	2.6	2.3	2.1	2.1	2.0	2.0	3.3	4.5	5.3

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS4 (400 hPa)
NOAA16, using all observations

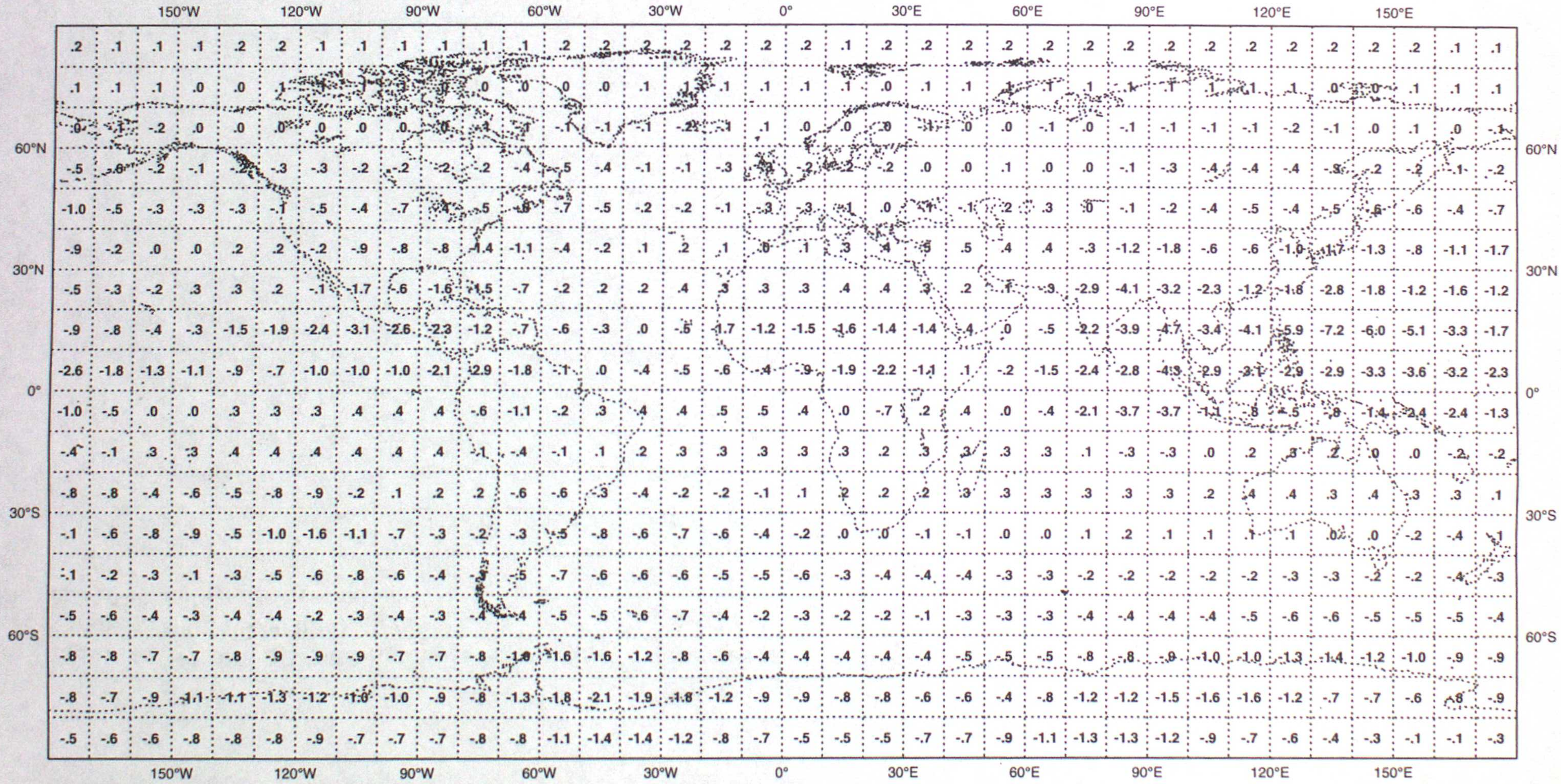
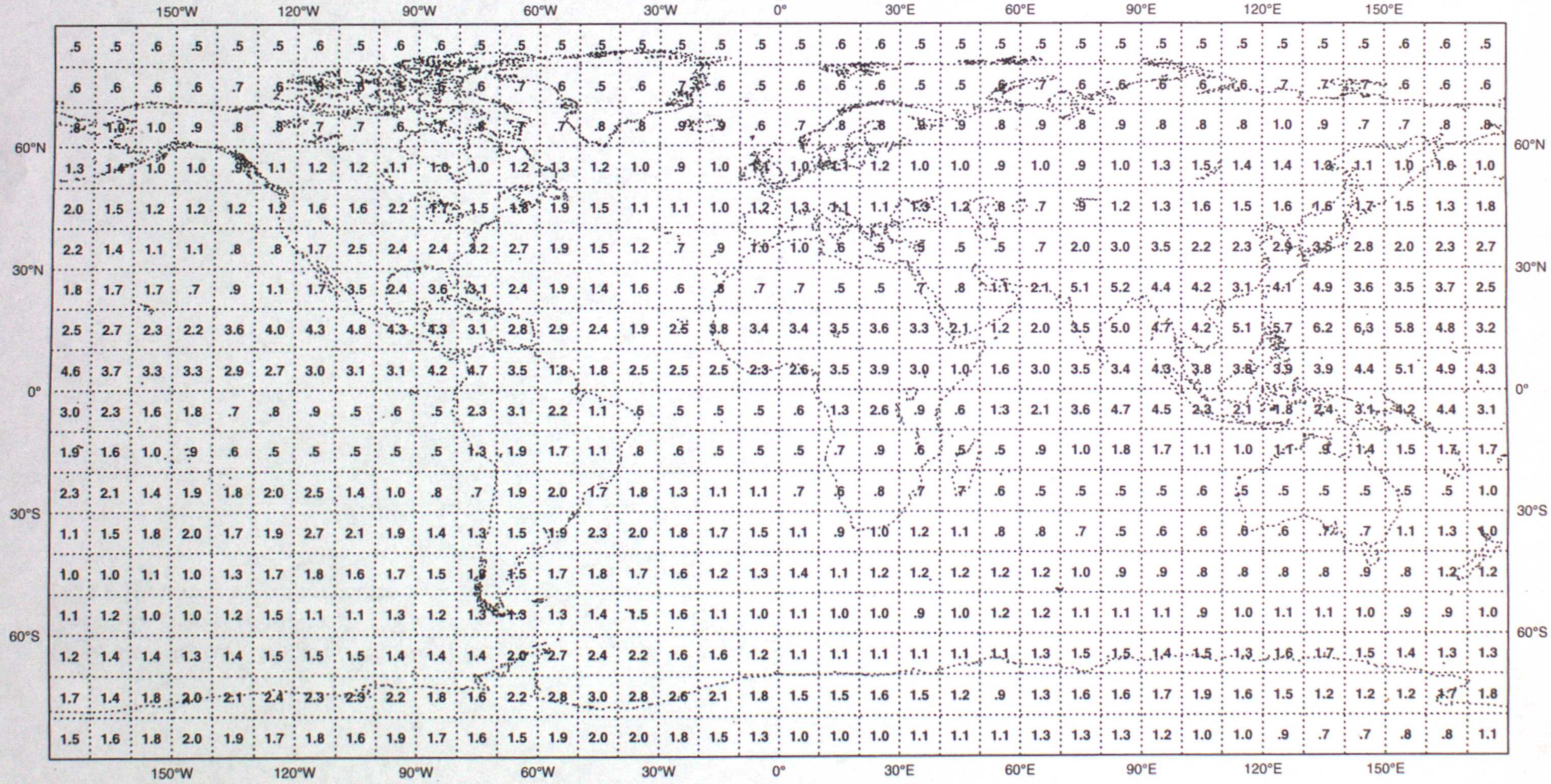

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



.5	.5	.6	.5	.5	.5	.6	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5
.6	.6	.6	.6	.7	.6	.6	.5	.5	.6	.6	.7	.6	.5	.6	.7	.6	.5	.6	.6	.6	.5	.5	.6	.7	.6	.6	.6	.6	.6	.7	.7	.7	.6	.6	.6
.8	1.0	1.0	.9	.8	.8	.7	.7	.6	.7	.8	.7	.7	.8	.8	.9	.9	.6	.7	.8	.8	.8	.9	.8	.9	.8	.9	.8	.8	.8	1.0	.9	.7	.7	.8	.8
1.3	1.4	1.0	1.0	.9	1.1	1.2	1.2	1.1	1.0	1.0	1.2	1.3	1.2	1.0	.9	1.0	1.1	1.0	1.1	1.2	1.0	1.0	.9	1.0	.9	1.0	1.3	1.5	1.4	1.4	1.3	1.1	1.0	1.0	1.0
2.0	1.5	1.2	1.2	1.2	1.2	1.6	1.6	2.2	1.7	1.5	1.8	1.9	1.5	1.1	1.1	1.0	1.2	1.3	1.1	1.1	1.3	1.2	.8	.7	.9	1.2	1.3	1.6	1.5	1.6	1.6	1.7	1.5	1.3	1.8
2.2	1.4	1.1	1.1	.8	.8	1.7	2.5	2.4	2.4	3.2	2.7	1.9	1.5	1.2	.7	.9	1.0	1.0	.6	.5	.5	.5	.5	.7	2.0	3.0	3.5	2.2	2.3	2.9	3.5	2.8	2.0	2.3	2.7
1.8	1.7	1.7	.7	.9	1.1	1.7	3.5	2.4	3.6	3.1	2.4	1.9	1.4	1.6	.6	.8	.7	.7	.5	.5	.7	.8	1.1	2.1	5.1	5.2	4.4	4.2	3.1	4.1	4.9	3.6	3.5	3.7	2.5
2.5	2.7	2.3	2.2	3.6	4.0	4.3	4.8	4.3	4.3	3.1	2.8	2.9	2.4	1.9	2.5	3.8	3.4	3.4	3.5	3.6	3.3	2.1	1.2	2.0	3.5	5.0	4.7	4.2	5.1	5.7	6.2	6.3	5.8	4.8	3.2
4.6	3.7	3.3	3.3	2.9	2.7	3.0	3.1	3.1	4.2	4.7	3.5	1.8	1.8	2.5	2.5	2.5	2.3	2.6	3.5	3.9	3.0	1.0	1.6	3.0	3.5	3.4	4.3	3.8	3.8	3.9	3.9	4.4	5.1	4.9	4.3
3.0	2.3	1.6	1.8	.7	.8	.9	.5	.6	.5	2.3	3.1	2.2	1.1	.5	.5	.5	.5	.6	1.3	2.6	.9	.6	1.3	2.1	3.6	4.7	4.5	2.3	2.1	1.8	2.4	3.1	4.2	4.4	3.1
1.9	1.6	1.0	.9	.6	.5	.5	.5	.5	.5	1.3	1.9	1.7	1.1	.8	.6	.5	.5	.5	.7	.9	.6	.5	.5	.9	1.0	1.8	1.7	1.1	1.0	1.1	.9	1.4	1.5	1.7	1.7
2.3	2.1	1.4	1.9	1.8	2.0	2.5	1.4	1.0	.8	.7	1.9	2.0	1.7	1.8	1.3	1.1	1.1	.7	.6	.8	.7	.7	.6	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	1.0
1.1	1.5	1.8	2.0	1.7	1.9	2.7	2.1	1.9	1.4	1.3	1.5	1.9	2.3	2.0	1.8	1.7	1.5	1.1	.9	1.0	1.2	1.1	.8	.8	.7	.5	.6	.6	.6	.6	.7	.7	1.1	1.3	1.0
1.0	1.0	1.1	1.0	1.3	1.7	1.8	1.6	1.7	1.5	1.8	1.5	1.7	1.8	1.7	1.6	1.2	1.3	1.4	1.1	1.2	1.2	1.2	1.2	1.2	1.0	.9	.9	.8	.8	.8	.8	.9	.8	1.2	1.2
1.1	1.2	1.0	1.0	1.2	1.5	1.1	1.1	1.3	1.2	1.3	1.3	1.3	1.4	1.5	1.6	1.1	1.0	1.1	1.0	1.0	.9	1.0	1.2	1.2	1.1	1.1	1.1	.9	1.0	1.1	1.1	1.0	.9	.9	1.0
1.2	1.4	1.4	1.3	1.4	1.5	1.5	1.5	1.4	1.4	1.4	2.0	2.7	2.4	2.2	1.6	1.6	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.3	1.5	1.5	1.4	1.5	1.3	1.6	1.7	1.5	1.4	1.3	1.3
1.7	1.4	1.8	2.0	2.1	2.4	2.3	2.3	2.2	1.8	1.6	2.2	2.8	3.0	2.8	2.6	2.1	1.8	1.5	1.5	1.6	1.5	1.2	.9	1.3	1.6	1.6	1.7	1.9	1.6	1.5	1.2	1.2	1.2	1.7	1.8
1.5	1.6	1.8	2.0	1.9	1.7	1.8	1.6	1.9	1.7	1.6	1.5	1.9	2.0	2.0	1.8	1.5	1.3	1.0	1.0	1.0	1.1	1.1	1.1	1.3	1.3	1.3	1.2	1.0	1.0	.9	.7	.7	.8	.8	1.1

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations

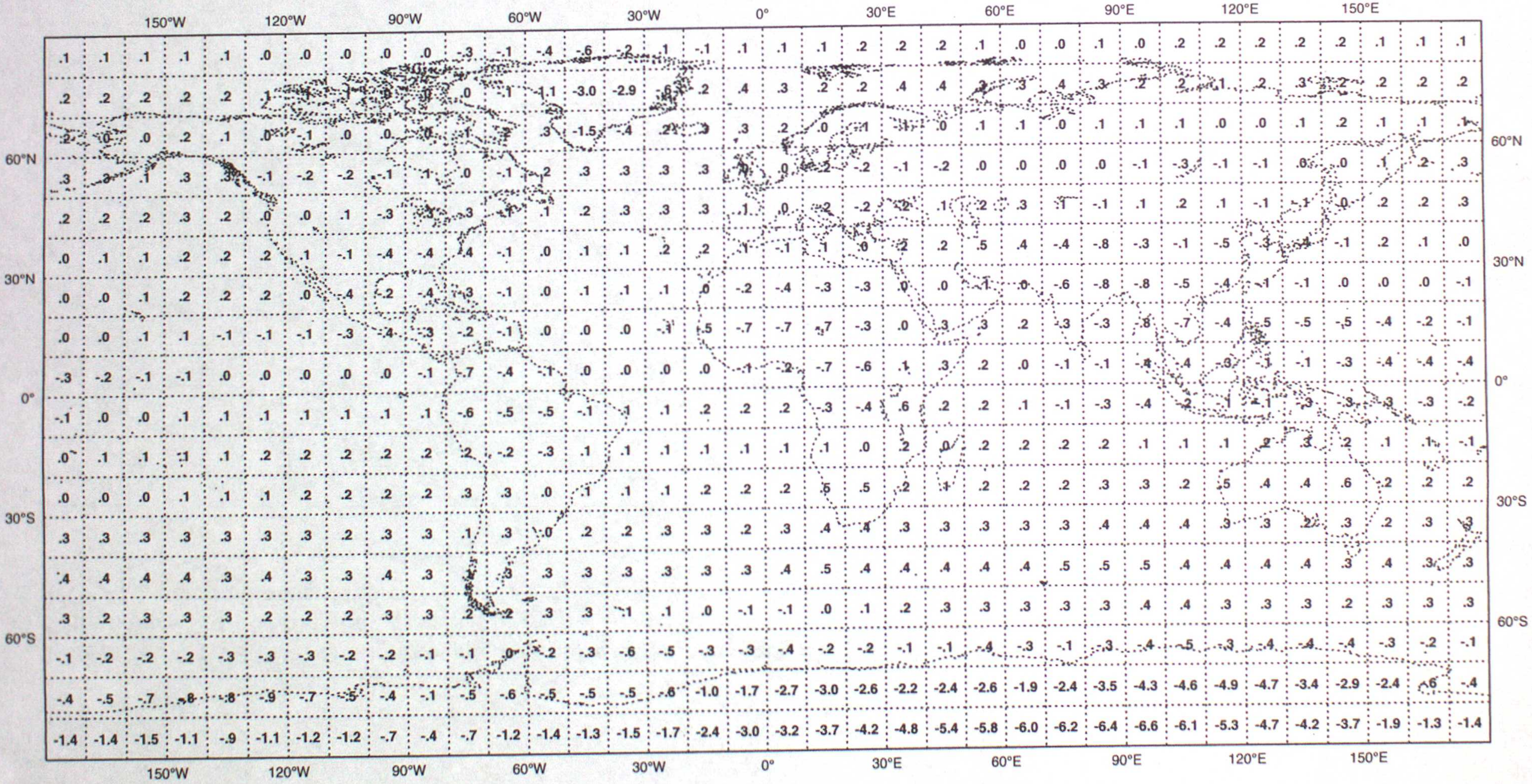
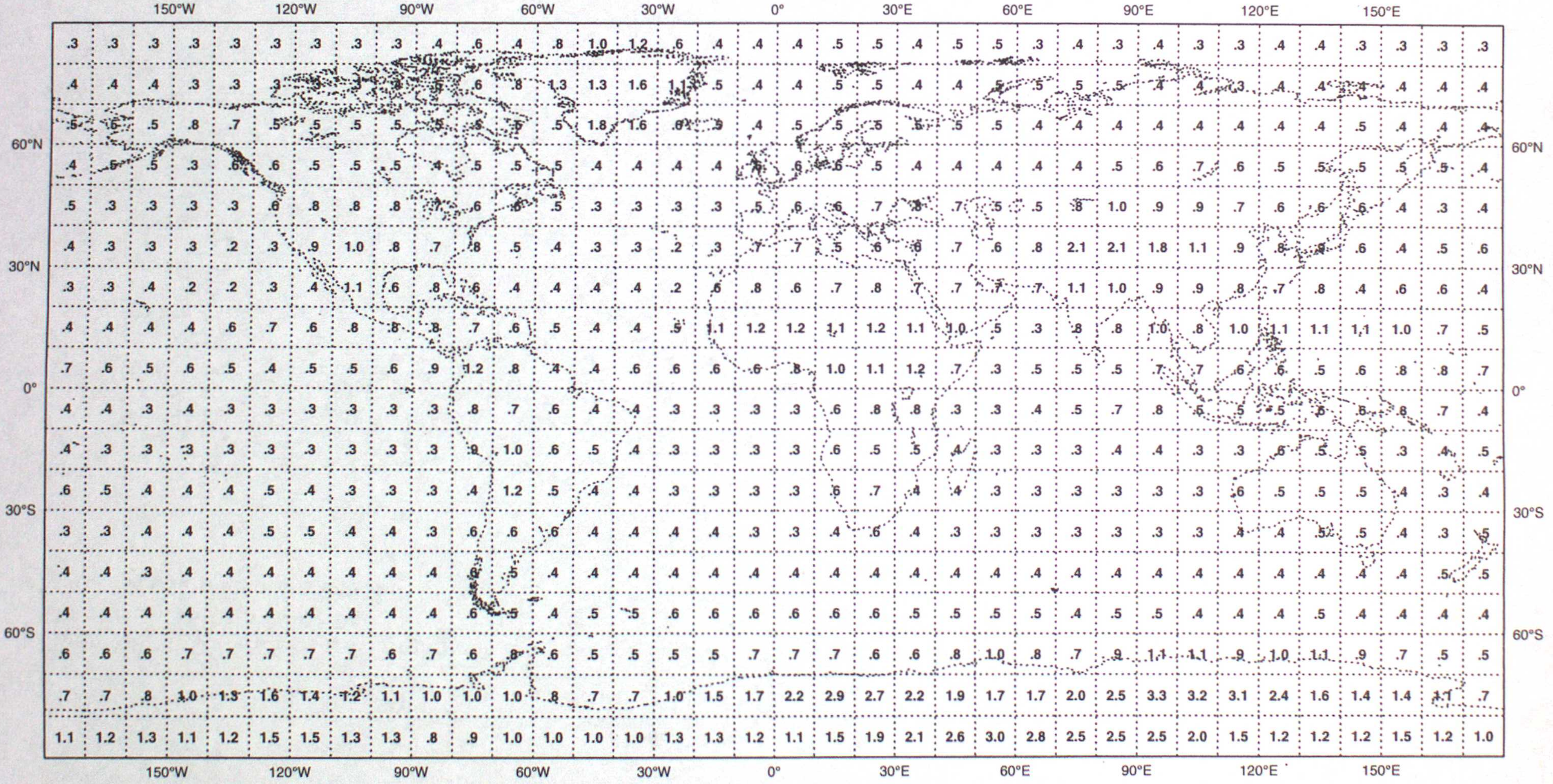

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
.1 .1 .1 .1 .1 .0 .0 .0 .0 .0 -.3 -.1 -.4 -.6 -.2 .1 -.1 .1 .1 .1 .2 .2 .2 .1 .0 .0 .1 .0 .2 .2 .2 .2 .2 .1 .1 .1
.2 .2 .2 .2 .2 .1 .1 .1 .0 .0 .0 -.1 -1.1 -3.0 -2.9 -.6 .2 .4 .3 .2 .2 .4 .4 .3 .3 .4 -.3 .2 .2 .1 .2 .3 .2 .2 .2 .2
.2 .0 .0 .2 .1 .0 -.1 .0 .0 .0 .1 .2 .3 -1.5 -.4 .2 .3 .3 .2 .0 .1 .1 .0 .1 .1 .0 .1 .1 .1 .0 .0 .1 .2 .1 .1 .1
.3 .3 .1 .3 .3 -.1 -.2 -.2 -.1 .1 .0 -.1 .2 .3 .3 .3 .3 .0 .0 -.2 -.2 -.1 -.2 .0 .0 .0 .0 -.1 -.3 -.1 -.1 .0 .0 .1 .2 .3
.2 .2 .2 .3 .2 .0 .0 .1 -.3 -.3 -.3 .1 .1 .2 .3 .3 .3 .1 .0 -.2 -.2 .2 .1 .2 .3 .1 -.1 .1 .2 .1 -.1 -.1 .0 .2 .2 .3
.0 .1 .1 .2 .2 .2 .1 -.1 -.4 -.4 .4 -.1 .0 .1 .1 .2 .2 .1 -.1 .1 .0 .2 .2 .5 .4 -.4 -.8 -.3 -.1 -.5 -.3 -.4 -.1 .2 .1 .0
.0 .0 .1 .2 .2 .2 .0 -.4 -.2 -.4 -.3 -.1 .0 .1 .1 .1 .0 -.2 -.4 -.3 -.3 .0 .0 -.1 .0 -.6 -.8 -.8 -.5 -.4 -.1 -.1 .0 .0 .0 -.1
.0 .0 .1 .1 -.1 -.1 -.1 -.3 -.4 -.3 -.2 -.1 .0 .0 .0 -.1 .5 -.7 -.7 -.7 -.3 .0 .3 .3 .2 -.3 -.3 -.8 -.7 -.4 -.5 -.5 -.5 -.4 -.2 -.1
-.3 -.2 -.1 -.1 .0 .0 .0 .0 .0 -.1 -.7 -.4 -.1 .0 .0 .0 .0 -.1 -.2 -.7 -.6 .1 .3 .2 .0 -.1 -.1 -.4 -.4 -.3 -.1 -.1 -.3 -.4 -.4 -.4
-.1 .0 .0 .1 .1 .1 .1 .1 .1 .1 -.6 -.5 -.5 -.1 .1 .1 .2 .2 .2 -.3 -.4 .6 .2 .2 .1 -.1 -.3 -.4 -.2 -.1 -.1 -.3 -.3 -.3 -.3 -.2
.0 .1 .1 .1 .1 .2 .2 .2 .2 .2 .2 -.2 -.3 .1 .1 .1 .1 .1 .1 .1 .0 .2 .0 .2 .2 .2 .2 .1 .1 .1 .2 .3 .2 .1 .1 -.1
.0 .0 .0 .1 .1 .1 .2 .2 .2 .2 .3 .3 .0 .1 .1 .1 .2 .2 .2 .5 .5 .2 .1 .2 .2 .2 .3 .3 .2 .5 .4 .4 .6 .2 .2 .2
.3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .1 .3 .0 .2 .2 .3 .3 .2 .3 .4 .4 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .2 .3 .2 .3 .3
.4 .4 .4 .4 .3 .4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .5 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .3 .4 .3 .3
.3 .2 .3 .3 .3 .2 .2 .2 .3 .3 .2 .2 .3 .3 .1 .1 .0 -.1 -.1 .0 .1 .2 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .2 .3 .3 .3
-.1 -.2 -.2 -.2 -.3 -.3 -.3 -.2 -.2 -.1 -.1 .0 -.2 -.3 -.6 -.5 -.3 -.3 -.4 -.2 -.2 -.1 -.1 -.4 -.3 -.1 -.3 -.4 -.5 -.3 -.4 -.4 -.4 -.3 -.2 -.1
-.4 -.5 -.7 -.8 -.8 -.9 -.7 -.5 -.4 -.1 -.5 -.6 -.5 -.5 -.5 -.6 -1.0 -1.7 -2.7 -3.0 -2.6 -2.2 -2.4 -2.6 -1.9 -2.4 -3.5 -4.3 -4.6 -4.9 -4.7 -3.4 -2.9 -2.4 -.6 -.4
-1.4 -1.4 -1.5 -1.1 -.9 -1.1 -1.2 -1.2 -.7 -.4 -.7 -1.2 -1.4 -1.3 -1.5 -1.7 -2.4 -3.0 -3.2 -3.7 -4.2 -4.8 -5.4 -5.8 -6.0 -6.2 -6.4 -6.6 -6.1 -5.3 -4.7 -4.2 -3.7 -1.9 -1.3 -1.4

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.6	.4	.8	1.0	1.2	.6	.4	.4	.4	.5	.5	.4	.5	.5	.3	.4	.3	.4	.3	.3	.4	.4	.3	.3	.3	.3
.4	.4	.4	.3	.3	.3	.3	.3	.8	.5	.6	.8	1.3	1.3	1.6	1.1	.5	.4	.4	.5	.5	.4	.4	.5	.5	.5	.5	.4	.4	.3	.4	.4	.4	.4	.4	.4
.5	.6	.5	.8	.7	.5	.5	.5	.5	.5	.5	.5	.5	1.8	1.6	.6	.9	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4
.4	.5	.5	.3	.6	.6	.5	.5	.5	.4	.5	.5	.5	.4	.4	.4	.4	.5	.6	.6	.5	.4	.4	.4	.4	.4	.5	.6	.7	.6	.5	.5	.5	.5	.5	.4
.5	.3	.3	.3	.3	.6	.8	.8	.8	.7	.6	.6	.5	.3	.3	.3	.3	.5	.6	.6	.7	.8	.7	.5	.5	.8	1.0	.9	.9	.7	.6	.6	.6	.4	.3	.4
.4	.3	.3	.3	.2	.3	.9	1.0	.8	.7	.8	.5	.4	.3	.3	.2	.3	.7	.7	.5	.6	.6	.7	.6	.8	2.1	2.1	1.8	1.1	.9	.8	.9	.6	.4	.5	.6
.3	.3	.4	.2	.2	.3	.4	1.1	.6	.8	.6	.4	.4	.4	.4	.2	.6	.8	.6	.7	.8	.7	.7	.7	.7	1.1	1.0	.9	.9	.8	.7	.8	.4	.6	.6	.4
.4	.4	.4	.4	.6	.7	.6	.8	.8	.8	.7	.6	.5	.4	.4	.5	1.1	1.2	1.2	1.1	1.2	1.1	1.0	.5	.3	.8	.8	1.0	.8	1.0	1.1	1.1	1.1	1.0	.7	.5
.7	.6	.5	.6	.5	.4	.5	.5	.6	.9	1.2	.8	.4	.4	.6	.6	.6	.6	.8	1.0	1.1	1.2	.7	.3	.5	.5	.5	.7	.7	.6	.6	.5	.6	.8	.8	.7
.4	.4	.3	.4	.3	.3	.3	.3	.3	.3	.8	.7	.6	.4	.4	.3	.3	.3	.3	.6	.8	.8	.3	.3	.4	.5	.7	.8	.5	.5	.5	.6	.6	.8	.7	.4
.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.9	1.0	.6	.5	.4	.3	.3	.3	.3	.6	.5	.5	.4	.3	.3	.3	.4	.4	.3	.3	.6	.5	.5	.3	.4	.5
.6	.5	.4	.4	.4	.5	.4	.3	.3	.3	.4	1.2	.5	.4	.4	.3	.3	.3	.3	.6	.7	.4	.4	.3	.3	.3	.3	.3	.3	.6	.5	.5	.5	.4	.3	.4
.3	.3	.4	.4	.4	.5	.5	.4	.4	.3	.6	.6	.6	.4	.4	.4	.4	.3	.3	.4	.6	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.5	.5	.4	.3	.5
.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.5	.4	.5	.5	.6	.6	.6	.6	.6	.6	.5	.5	.5	.5	.4	.5	.5	.4	.4	.4	.5	.4	.4	.4	.4
.6	.6	.6	.7	.7	.7	.7	.7	.6	.7	.6	.8	.6	.5	.5	.5	.5	.7	.7	.7	.6	.6	.8	1.0	.8	.7	.9	1.1	1.1	.9	1.0	1.1	.9	.7	.5	.5
.7	.7	.8	1.0	1.3	1.6	1.4	1.2	1.1	1.0	1.0	1.0	.8	.7	.7	1.0	1.5	1.7	2.2	2.9	2.7	2.2	1.9	1.7	1.7	2.0	2.5	3.3	3.2	3.1	2.4	1.6	1.4	1.4	1.1	.7
1.1	1.2	1.3	1.1	1.2	1.5	1.5	1.3	1.3	.8	.9	1.0	1.0	1.0	1.0	1.3	1.3	1.2	1.1	1.5	1.9	2.1	2.6	3.0	2.8	2.5	2.5	2.5	2.0	1.5	1.2	1.2	1.2	1.5	1.2	1.0

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

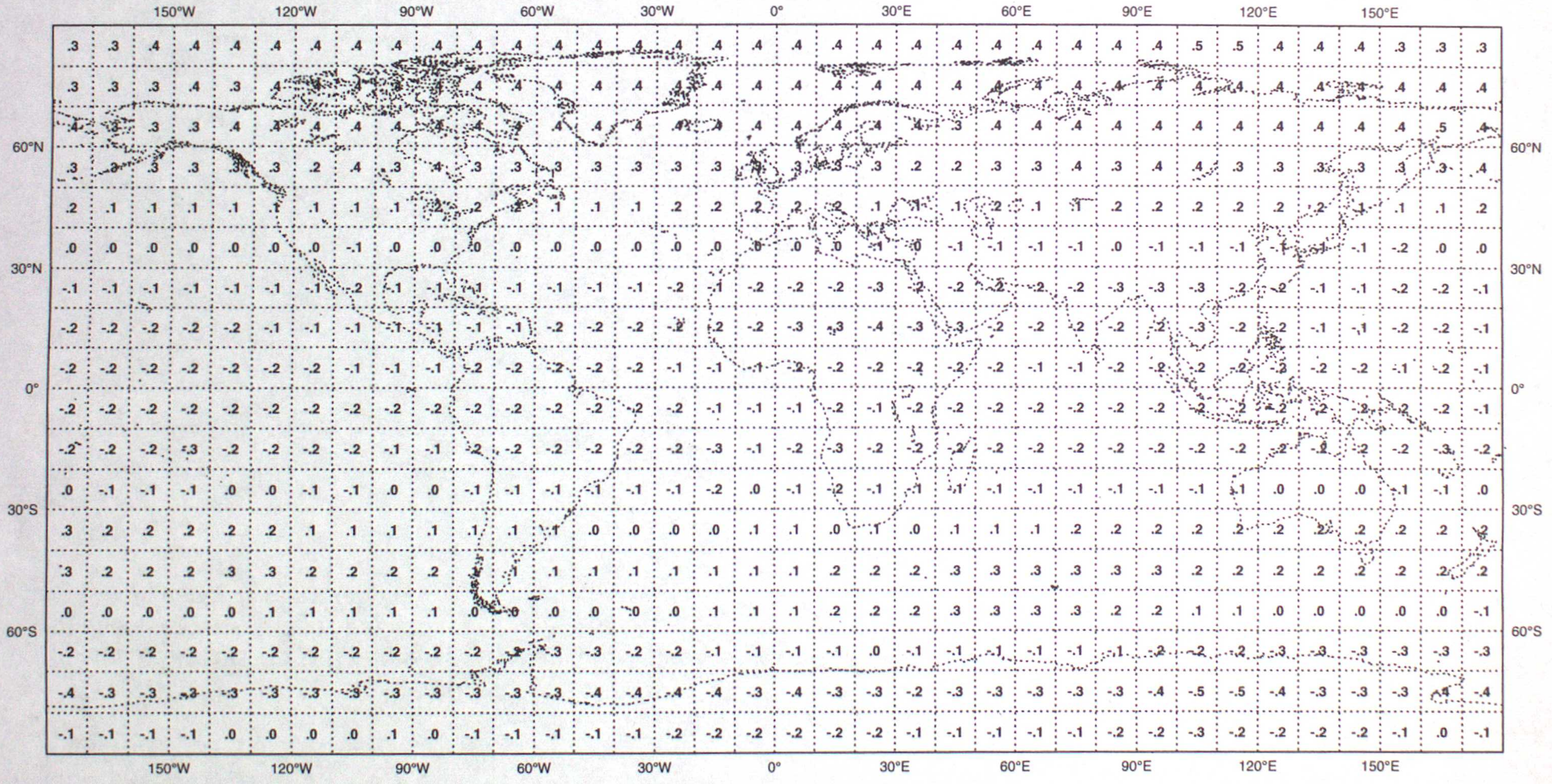

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .4 .4 .4 .3 .3 .3
.3 .3 .3 .4 .3 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4
.3 .3 .3 .3 .3 .3 .2 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .2 .3 .3 .4 .3 .4 .4 .3 .3 .3 .3 .3 .3 .4
.2 .1 .1 .1 .1 .1 .1 .1 .1 .2 .2 .2 .1 .1 .1 .2 .2 .2 .2 .2 .1 .1 .1 .2 .1 .1 .2 .2 .2 .2 .2 .2 .1 .1 .1 .2
.0 .0 .0 .0 .0 .0 .0 -.1 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 .0 -.1 .0 -.1 -.1 -.1 -.1 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.2 .0 .0
-.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.1 -.2 -.2 -.2 -.3 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.3 -.2 -.2 -.1 -.1 -.2 -.2 -.1
-.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.4 -.3 -.3 -.2 -.2 -.2 -.2 -.2 -.3 -.2 -.2 -.1 -.1 -.2 -.2 -.1
-.2 -.2 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.2 -.2 -.2 -.2 -.3 -.2 -.2 -.1 -.2 -.1
-.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1 -.2 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.1
-.2 -.2 -.2 -.3 -.2 -.2 -.2 -.2 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.1 -.2 -.3 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.2
.0 -.1 -.1 -.1 .0 .0 -.1 -.1 .0 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.2 .0 -.1 -.2 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 -.1 .0 .0 .0 -.1 -.1 .0
.3 .2 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .0 .0 .0 .0 .1 .1 .0 .1 .0 .1 .1 .1 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2
.3 .2 .2 .2 .3 .3 .2 .2 .2 .2 .1 .1 .1 .1 .1 .1 .1 .1 .1 .2 .2 .2 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2
.0 .0 .0 .0 .0 .1 .1 .1 .1 .1 .0 .0 .0 .0 .0 .0 .1 .1 .1 .2 .2 .2 .3 .3 .3 .3 .2 .2 .1 .1 .0 .0 .0 .0 .0 -.1
-.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.2 -.3 -.3 -.2 -.2 -.1 -.1 -.1 -.1 .0 -.1 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.3 -.3 -.3 -.3 -.3 -.3
-.4 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.3 -.4 -.4 -.4 -.4 -.3 -.4 -.3 -.3 -.2 -.3 -.3 -.3 -.3 -.3 -.4 -.5 -.5 -.4 -.3 -.3 -.3 -.4 -.4
-.1 -.1 -.1 -.1 .0 .0 .0 .0 .1 .0 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.2 -.2 -.2 -.2 -.1 -.1 -.1 -.1 -.1 -.2 -.2 -.3 -.2 -.2 -.2 -.2 -.1 .0 -.1

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations

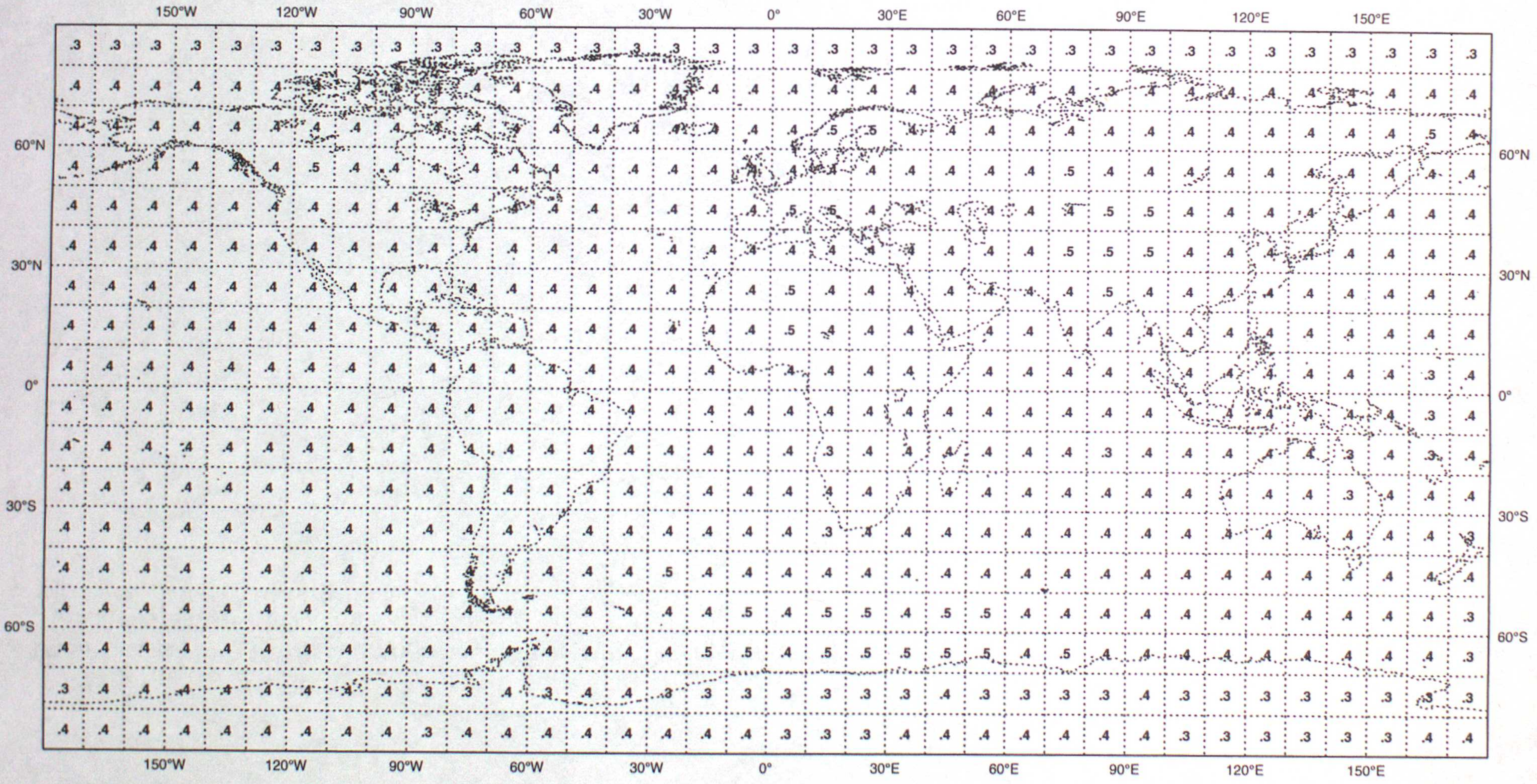
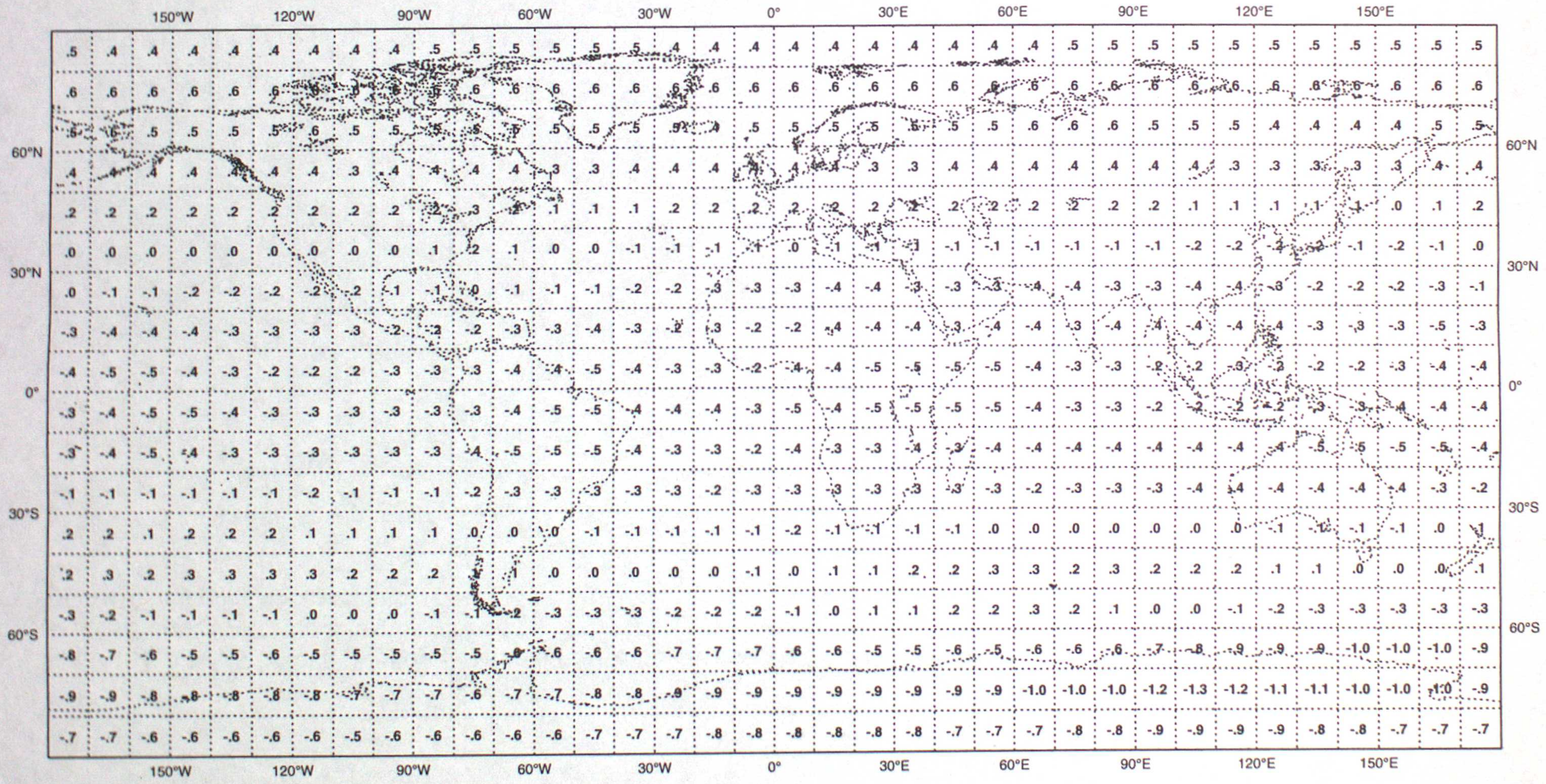

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
.5	.6	.5	.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.5	.5	.5	.4	.4	.4	.4	.5	.5
.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.4	.4
.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.0	.1	.2
.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.2	.1	.0	.0	-.1	-.1	-.1	-.1	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.1	-.2	-.1	.0
.0	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.1	-.1	.0	-.1	-.1	-.1	-.2	-.2	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.4	-.4	-.3	-.2	-.2	-.2	-.3	-.1
-.3	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.3	-.3	-.4	-.3	-.2	-.3	-.2	-.2	-.4	-.4	-.4	-.3	-.4	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.5	-.3
-.4	-.5	-.5	-.4	-.3	-.2	-.2	-.2	-.3	-.3	-.3	-.4	-.4	-.5	-.4	-.3	-.3	-.2	-.4	-.4	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.2	-.2	-.3	-.2	-.2	-.2	-.3	-.4	-.4
-.3	-.4	-.5	-.5	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.5	-.5	-.4	-.4	-.4	-.3	-.5	-.4	-.5	-.5	-.5	-.5	-.4	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.3	-.4	-.4	-.4
-.3	-.4	-.5	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.5	-.5	-.5	-.4	-.3	-.3	-.2	-.4	-.3	-.3	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.4
-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.1	-.1	-.1	-.2	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.2
.2	.2	.1	.2	.2	.2	.1	.1	.1	.1	.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	-.1	-.1	.0	.1
.2	.3	.2	.3	.3	.3	.3	.2	.2	.2	.1	.1	.0	.0	.0	.0	.0	-.1	.0	.1	.1	.2	.2	.3	.3	.2	.3	.2	.2	.2	.1	.1	.0	.0	.0	.1
-.3	-.2	-.1	-.1	-.1	-.1	.0	.0	.0	-.1	-.1	-.2	-.3	-.3	-.3	-.2	-.2	-.2	-.1	.0	.1	.1	.2	.2	.3	.2	.1	.0	.0	-.1	-.2	-.3	-.3	-.3	-.3	-.3
-.8	-.7	-.6	-.5	-.5	-.6	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.6	-.6	-.5	-.5	-.6	-.5	-.6	-.6	-.6	-.7	-.8	-.9	-.9	-.9	-1.0	-1.0	-1.0	-.9
-.9	-.9	-.8	-.8	-.8	-.8	-.8	-.7	-.7	-.7	-.6	-.7	-.7	-.8	-.8	-.9	-.9	-.9	-.9	-.9	-.9	-.9	-.9	-.9	-1.0	-1.0	-1.0	-1.2	-1.3	-1.2	-1.1	-1.1	-1.0	-1.0	-1.0	-.9
-.7	-.7	-.6	-.6	-.6	-.6	-.6	-.5	-.6	-.6	-.6	-.6	-.6	-.7	-.7	-.7	-.8	-.8	-.8	-.8	-.8	-.8	-.7	-.7	-.7	-.8	-.8	-.9	-.9	-.9	-.9	-.8	-.8	-.7	-.7	-.7

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). AUGUST 2004
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations

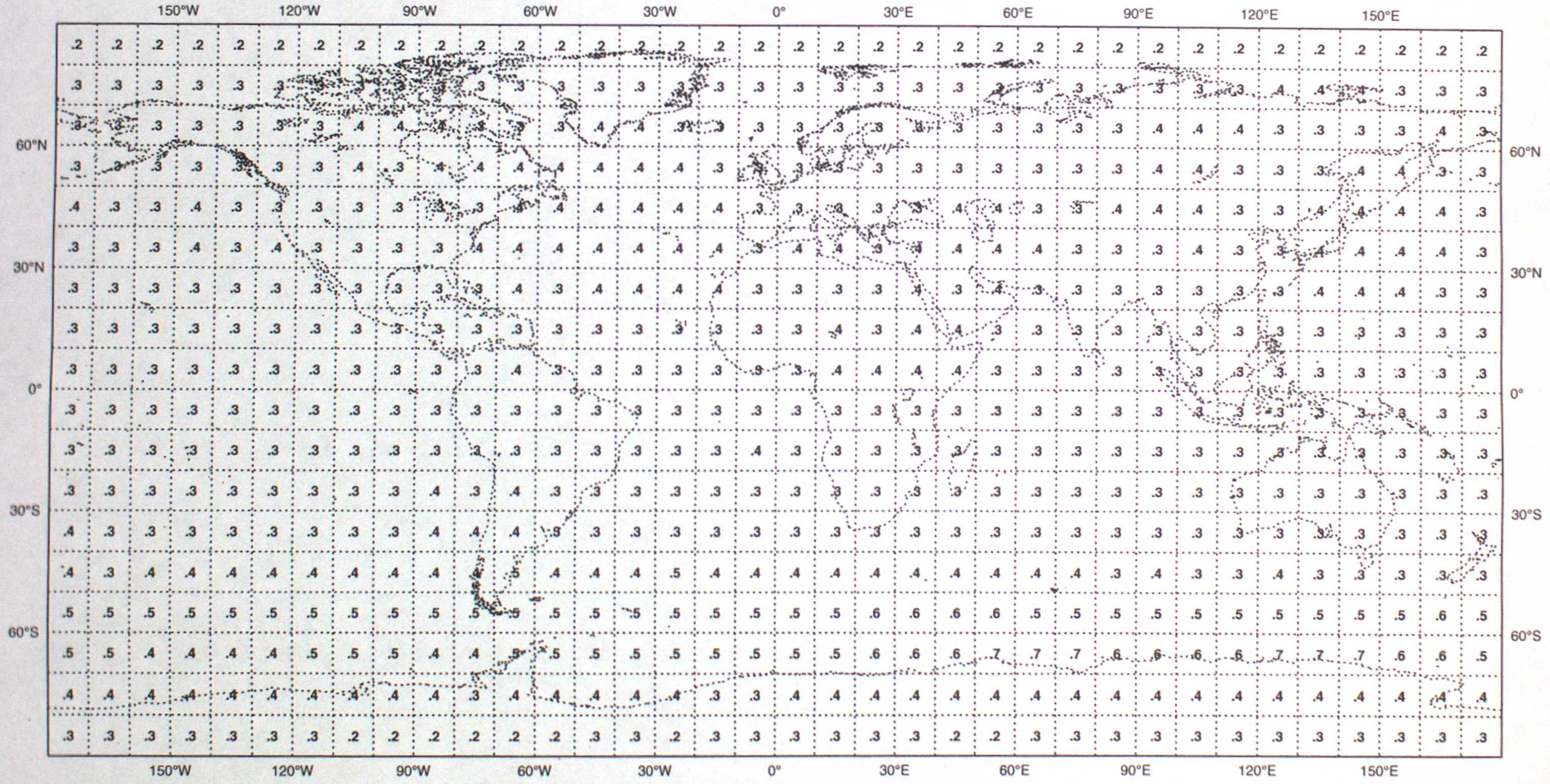

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
.2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .2 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .4 .3
.3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .4 .4 .3 .3
.4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .4 .4 .3 .3 .4 .4 .4 .3 .3 .4 .4 .4 .4 .3
.3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .3 .4 .4 .4 .4 .3 .3 .3 .4 .3 .3 .4 .4 .4 .4 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .4 .4 .4 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .5 .4 .4 .4 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .3 .4 .3 .3 .3 .3 .3
.5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .6 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .5
.5 .5 .4 .4 .4 .4 .5 .5 .5 .4 .4 .5 .5 .5 .5 .5 .5 .5 .5 .5 .6 .6 .6 .7 .7 .7 .6 .6 .6 .6 .7 .7 .7 .6 .6 .5
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.3 .3 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .2 .3 .3 .3 .3 .3 .3 .2 .2 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed (m s^{-1}) :Wind direction (degrees)
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the wind observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors
GROSS ERROR LIMITS	:15 hPa (pressure) :25 m s^{-1} (Vector Wind)	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13531	21.7	-30.6	P	722	0	2	0.7	-0.2	0.7
13533	20.9	-61.8	P	700	0	1	0.6	0.6	0.9
13600	22.2	-44.1	P	569	0	16	0.6	1.4	1.5
13602	17.8	-41.2	P	429	0	0	0.6	0.5	0.8
41504	33.5	-73.4	P	1286	0	67	1.0	0.2	1.0
41520	24.1	-66.3	P	1139	0	68	0.6	-0.1	0.6
41521	18.6	-57.8	P	805	0	66	1.5	-1.2	2.0
41539	24.6	-68.9	P	586	0	0	0.5	0.7	0.9
41540	26.5	-76.1	P	553	0	0	0.5	0.9	1.0
41541	24.8	-76.5	P	559	0	0	0.6	1.1	1.2
41542	26.0	-68.5	P	572	0	0	0.5	0.1	0.5
41543	23.5	-70.5	P	568	0	0	0.5	0.3	0.6
41544	23.0	-66.8	P	565	0	0	0.6	0.6	0.8
41545	23.3	-71.4	P	558	0	0	0.5	0.9	1.1
41546	12.6	-56.7	P	1003	0	42	1.0	1.1	1.5
41547	10.1	-49.5	P	986	0	41	0.8	1.0	1.3
41548	16.9	-51.5	P	1006	0	43	1.2	0.9	1.5
41549	16.3	-56.0	P	979	0	42	1.0	1.2	1.6
41550	12.0	-50.0	P	950	0	40	0.8	1.0	1.3
41551	15.7	-46.4	P	975	0	40	0.9	1.1	1.4
41590	28.1	-61.5	P	504	0	0	0.6	1.4	1.5
41594	27.4	-39.4	P	561	0	0	0.9	0.0	0.9
41595	24.1	-41.9	P	540	0	0	0.7	1.0	1.2
41600	40.1	-53.3	P	556	0	1	0.9	-0.2	0.9
41601	38.2	-40.6	P	641	0	0	0.5	0.0	0.5
41631	32.7	-73.2	P	464	0	1	1.2	1.5	1.9
41646	27.4	-77.8	P	470	0	0	0.6	1.1	1.2
41655	24.7	-57.6	P	423	0	0	0.7	1.2	1.4
41663	17.0	-58.1	P	973	0	79	1.4	-2.3	2.7
41664	17.4	-50.0	P	879	0	84	1.4	-2.6	2.9
41665	14.7	-46.0	P	885	0	74	1.6	-2.1	2.6
41666	11.0	-47.1	P	893	0	71	1.0	-1.7	1.9
41920	21.6	-70.0	P	1	0	0	0.0	1.9	1.9
41930	22.5	-68.6	P	1	0	0	0.0	3.1	3.1
41937	21.6	-69.0	P	1	0	0	0.0	3.0	3.0
44546	49.1	-10.5	P	685	0	21	0.6	-0.2	0.6
44547	56.5	-40.5	P	653	0	0	0.6	-0.2	0.6
44549	47.8	-47.2	P	654	1	1	0.7	0.0	0.7
44551	54.5	-14.7	P	647	1	2	1.3	0.7	1.4
44603	61.2	-8.0	P	721	0	1	0.7	0.1	0.7
44609	58.2	-13.8	P	316	0	0	0.5	-1.1	1.2
44612	54.7	-20.7	P	615	0	0	0.5	-0.2	0.5
44614	59.1	-34.9	P	681	0	1	1.1	-0.7	1.3
44617	48.2	-41.7	P	617	0	0	0.7	0.0	0.7
44623	29.2	-48.6	P	684	0	0	0.5	-0.3	0.6
44624	48.8	-38.8	P	604	0	0	0.8	0.0	0.8
44625	62.2	-35.9	P	673	0	0	0.8	0.1	0.8
44626	42.4	-49.4	P	616	0	1	0.8	0.3	0.9
44627	46.7	-28.7	P	593	0	1	0.7	-0.2	0.7
44628	33.9	-22.7	P	685	0	2	0.5	-0.9	1.1
44630	28.6	-38.8	P	881	0	26	0.7	0.3	0.8
44721	53.1	-49.4	P	164	1	1	0.7	0.3	0.7
44742	46.9	-21.3	P	606	0	0	0.6	-0.3	0.6
44743	48.9	-18.2	P	558	0	0	0.6	-0.2	0.7
44745	51.4	-21.6	P	711	0	0	0.7	-0.2	0.8
44747	51.2	-13.8	P	641	0	1	0.7	-0.2	0.7
44761	52.8	-25.9	P	593	0	2	1.1	0.2	1.1
44765	39.2	-45.1	P	760	0	24	0.6	-0.6	0.8
44766	51.3	-18.8	P	620	0	0	0.9	-0.7	1.1
44771	46.4	-8.5	P	67	0	19	0.6	-0.4	0.7
44773	63.1	-36.0	P	299	0	25	0.9	-0.2	0.9
44777	22.4	-39.1	P	267	0	15	1.0	-0.2	1.0

44778	28.7	-27.3	P	275	0	21	0.8	-0.1	0.8
48613	75.4	-15.9	P	551	0	1	1.0	0.3	1.0
62514	30.4	-31.4	P	710	0	0	0.6	0.0	0.6
62517	28.1	-47.2	P	627	0	1	0.7	-0.6	0.9
62556	42.6	-13.4	P	708	0	0	0.5	-0.3	0.6
62557	43.8	-13.9	P	713	1	1	0.5	-0.2	0.5
62558	42.4	-18.4	P	756	0	8	0.5	-0.3	0.6
62560	41.9	-15.3	P	642	0	1	0.5	0.5	0.7
62561	48.1	-24.3	P	654	0	1	0.9	-0.4	1.0
62562	52.6	-25.7	P	674	0	1	0.6	0.3	0.6
62563	53.8	-22.5	P	701	0	0	0.5	-0.4	0.6
62564	47.0	-22.0	P	710	0	1	0.6	-0.2	0.6
62565	55.7	-18.6	P	699	0	0	0.5	-0.3	0.6
62566	55.7	-31.2	P	713	0	0	0.5	-0.3	0.6
62694	49.3	-13.3	P	560	0	0	0.7	-0.1	0.7
62712	62.9	-8.3	P	620	0	0	0.4	-0.3	0.5
62801	28.7	-25.1	P	632	0	0	0.6	0.2	0.6
64524	64.4	-33.4	P	649	0	0	0.8	-0.3	0.8
64608	64.9	-37.0	P	675	0	0	0.7	-1.2	1.4
65597	50.9	-38.9	P	440	0	27	0.7	-0.3	0.8
65598	56.6	-25.4	P	364	0	23	0.6	-0.3	0.7
65599	56.7	-26.0	P	223	0	21	0.7	-0.3	0.7
65600	58.0	-39.0	P	153	0	16	2.3	-0.6	2.4

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13600	22.2	-44.1	SPEED	556	0	100	1.5	-1.7	2.2
13602	17.8	-41.2	SPEED	421	0	100	1.2	-1.7	2.1
41539	24.6	-68.9	SPEED	572	0	100	1.6	-1.1	2.0
41540	26.5	-76.1	SPEED	528	0	100	2.1	-0.9	2.3
41541	24.8	-76.5	SPEED	526	0	100	1.6	0.6	1.7
41542	26.0	-68.5	SPEED	552	0	100	1.3	-1.2	1.7
41543	23.5	-70.5	SPEED	554	0	100	1.6	-0.3	1.6
41544	23.0	-66.8	SPEED	530	0	100	1.7	0.2	1.7
41545	23.3	-71.4	SPEED	481	0	100	1.7	0.3	1.8
41590	28.1	-61.5	SPEED	343	0	100	6.2	6.8	9.2
41595	24.1	-41.9	SPEED	523	0	100	1.2	-1.0	1.5
44546	49.1	-10.5	SPEED	679	0	100	2.7	1.3	3.0
48613	75.4	-15.9	SPEED	541	1	100	1.5	-2.1	2.6
62565	55.7	-18.6	SPEED	551	0	100	1.8	0.5	1.9
62566	55.7	-31.2	SPEED	618	0	100	1.7	0.1	1.7

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13600	22.2	-44.1	DIRN.	122	0	0	32.5	11.3	34.4
13602	17.8	-41.2	DIRN.	225	0	0	11.0	-20.5	23.3
41539	24.6	-68.9	DIRN.	206	0	0	19.6	-5.8	20.4
41540	26.5	-76.1	DIRN.	178	0	0	25.5	-0.5	25.5
41541	24.8	-76.5	DIRN.	206	0	0	26.4	-17.5	31.6
41542	26.0	-68.5	DIRN.	101	0	0	19.0	35.9	40.6
41543	23.5	-70.5	DIRN.	350	0	0	16.5	28.2	32.6
41544	23.0	-66.8	DIRN.	361	0	0	26.6	35.4	44.3
41545	23.3	-71.4	DIRN.	293	0	0	10.9	14.1	17.9
41590	28.1	-61.5	DIRN.	88	0	0	26.3	-18.6	32.2
41595	24.1	-41.9	DIRN.	119	0	0	15.6	-27.1	31.3
44546	49.1	-10.5	DIRN.	472	0	0	17.6	7.7	19.2
48613	75.4	-15.9	DIRN.	58	5	0	165.5	12.4	165.9
62565	55.7	-18.6	DIRN.	430	0	0	17.6	0.1	17.6
62566	55.7	-31.2	DIRN.	484	0	0	15.9	-9.0	18.3

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in $m\ s^{-1}$

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 $m\ s^{-1}$ Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	553	0	7	1.7	0.3	398	0	6	0	8.3	0.2
ACA	1047	0	3	1.7	-0.2	696	0	1	0	6.0	0.6
AEA	449	0	2	1.3	0.1	398	0	5	0	11.5	-1.6
AEL	357	1	12	1.8	-0.1	345	0	14	0	10.3	-1.0
AFL	505	0	4	1.8	0.4	257	0	5	0	8.7	-0.1
AFR	738	0	3	1.5	0.2	708	0	8	0	10.8	-1.3
AJM	313	0	2	1.3	0.0	255	1	5	0	8.4	-0.6
AMT	89	0	12	1.7	0.0	89	0	18	0	10.1	1.3
AMX	320	0	2	1.4	0.3	255	1	5	0	9.8	-0.3
ATN	42	2	100	3.8	-1.9	26	0	0	0	6.4	-0.3
AVA	33	0	3	1.7	0.5	33	0	0	0	6.6	-0.3
AZA	459	1	3	1.5	-0.1	379	0	7	0	9.5	-0.4
BAL	269	0	13	1.6	-0.4	264	0	14	0	9.0	-0.3
BAW	462	0	14	1.8	-0.7	299	0	17	0	7.1	0.3
BHP	32	0	0	1.3	-0.7	31	0	0	0	4.0	0.3
BPA	331	1	14	2.1	0.2	329	1	13	0	9.5	-0.7
BWA	176	1	2	1.5	-0.2	155	1	10	0	11.0	-2.0
CFC	39	3	18	2.9	0.5	40	0	5	0	5.5	-0.5
CFG	499	0	3	1.4	-0.1	429	0	6	0	8.5	-0.8
CKS	148	0	8	2.1	0.2	104	1	11	0	7.9	0.4
CLX	263	0	3	1.6	-0.5	172	1	5	0	7.9	0.2
COA	181	0	43	1.7	0.1	124	0	42	0	10.4	-0.7
CRL	522	0	3	1.5	0.5	489	0	8	0	12.6	-1.7
CUB	166	0	2	1.2	-0.1	147	1	8	0	10.6	-1.2
DAL	1195	0	7	1.7	-0.4	877	0	8	0	9.5	-0.8
DCE	21	0	10	1.0	0.7	21	0	10	0	5.8	1.0
DHL	145	1	100	6.3	-5.9	85	0	45	0	17.8	5.1
DLH	547	0	14	1.6	0.0	524	0	15	0	6.6	0.4
DRD	100	1	8	2.3	0.1	100	0	14	0	12.5	-2.0
EDW	55	0	4	1.8	-0.2	43	0	5	0	8.4	-1.2
EEZ	84	0	10	1.3	0.2	85	0	19	0	11.5	-2.4
EIA	135	0	14	1.6	0.3	135	0	100	0	20.3	6.3
ELY	195	0	3	1.4	0.3	151	0	3	0	8.2	-1.0
ETH	31	0	3	1.5	0.2	31	0	3	0	4.5	0.8
FCA	142	1	4	1.4	0.2	115	0	6	0	10.9	-0.4
FDX	663	0	31	1.5	0.1	509	1	27	0	5.8	0.2
FIN	424	1	4	1.8	0.2	317	0	3	0	5.8	0.6
FWI	353	1	4	1.5	-0.3	354	0	9	0	10.1	-1.6
GCO	157	0	17	1.8	0.1	155	0	26	0	13.2	2.6
GRL	125	1	6	2.5	1.1	112	0	1	0	5.2	0.5
GTI	138	0	9	1.5	-0.1	124	0	13	0	7.3	0.3
HXL	206	0	5	1.8	-0.2	171	0	4	0	7.5	0.2
IBE	1442	1	6	1.3	0.0	1441	0	10	0	10.9	-1.4
ICE	1266	0	5	1.6	-0.1	798	0	5	0	6.4	0.6
ISR	65	3	14	2.6	-0.7	40	0	3	0	5.9	1.9
IWD	191	1	2	1.4	0.1	189	0	8	0	11.9	-1.7
KLM	909	0	2	1.7	-0.1	655	0	4	0	8.4	-0.4
LAN	37	3	19	1.9	0.7	37	0	16	0	10.5	0.1
LDI	319	1	4	1.6	0.2	259	0	4	0	8.5	-0.2
LOT	134	1	6	2.4	-0.4	101	2	7	0	8.1	0.6
LTU	677	0	6	1.4	-0.1	534	0	8	0	7.6	0.2
LXR	57	0	4	2.3	0.2	43	0	9	0	11.8	-1.4
MMZ	62	2	13	2.2	-0.9	63	0	13	0	6.5	-0.2
MON	66	2	8	2.3	0.5	40	0	3	0	7.0	0.5
MPD	259	0	1	1.6	0.4	230	1	9	0	13.3	-2.7
MPH	486	1	3	1.8	-0.9	311	0	2	0	6.3	0.2
MYT	280	1	4	1.4	0.1	200	0	6	0	7.1	-0.3
NAO	46	0	11	1.5	0.8	44	0	16	0	8.8	1.1
NCA	34	0	3	2.1	0.6	28	0	0	0	5.5	-0.3

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
NWA	1800	0	2	1.7	0.5	1768	0	3	0	7.6	0.2
OAE	257	0	9	1.7	-0.1	156	0	47	0	19.9	5.7
OOM	134	0	4	1.9	-1.3	96	0	3	0	7.1	1.1
PAC	182	2	7	1.8	0.1	120	1	7	0	7.3	0.9
PLM	199	0	2	1.7	1.1	183	0	8	0	12.1	-1.8
RAM	298	0	5	2.0	0.6	200	0	56	0	13.8	-1.8
RCH	187	0	100	3.6	-1.0	148	1	100	0	18.0	-1.3
RRR	77	1	6	1.8	-0.5	68	0	12	0	9.8	1.3
RZO	446	0	2	1.2	-0.3	367	0	8	0	12.0	-1.4
SCY	42	2	12	2.2	1.4	41	0	5	0	5.9	1.3
SEU	157	1	3	1.5	0.3	138	0	1	0	6.0	0.4
SSV	96	0	4	1.7	0.5	61	0	5	0	9.6	1.7
TAP	322	1	2	1.4	-0.3	270	1	7	0	11.4	-1.5
TCX	69	1	6	2.0	0.0	39	0	0	0	4.9	1.1
TSC	465	1	4	1.6	-0.5	341	0	3	0	7.3	0.4
UAE	29	0	7	1.3	-0.1	30	0	10	0	8.7	0.2
UAL	181	0	56	2.1	-0.9	128	0	54	0	8.7	0.6
UPS	1004	0	49	1.8	0.0	986	0	48	0	7.5	0.3
VIR	257	1	4	1.7	0.1	166	0	5	0	7.0	1.1
VVJ	23	0	4	1.2	-0.5	25	0	8	0	8.0	1.3
WOA	216	0	9	1.6	0.1	174	1	10	0	7.1	0.2
XLA	78	0	1	1.6	0.3	69	0	3	0	7.9	0.0
YSS	40	0	0	1.2	0.7	40	0	3	0	9.5	-0.4

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	32125	0	18	1.3	0.2	32125	0	18	0	4.5	0.2
N	422	0	4	2.1	0.5	266	0	3	0	8.2	0.3
US ACARS	21409	0	28	1.6	0.2	21409	0	26	0	5.1	0.3

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :100 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	100	2	0	2.0	15.1	15.0
DBBH	12	Z	100	5	0	11.7	16.6	11.8
DBLK	12	Z	100	27	0	12.1	39.3	37.4
EBUQ	12	Z	100	20	0	34.2	35.2	8.1
ELML7	00	Z	100	12	0	9.2	9.3	1.3
ELML7	12	Z	100	14	0	9.4	16.4	13.4
FQFL	00	Z	100	9	1	46.0	47.8	-13.0
FQFL	12	Z	100	11	0	82.1	87.9	-31.4
FQFM	00	Z	100	8	0	29.4	36.1	-20.9
FQFM	12	Z	100	12	0	31.5	36.1	17.7
KHRH	00	Z	100	8	0	10.0	27.9	26.0
KHRH	12	Z	100	9	0	9.4	26.9	25.2
LDWR	00	Z	100	29	0	10.1	11.6	5.9
LDWR	12	Z	100	29	0	14.4	15.4	5.5
OXVH2	00	Z	100	6	0	10.3	27.0	25.0
OXVH2	12	Z	100	10	1	51.4	52.4	10.2
OXYH2	00	Z	100	5	0	52.4	61.1	31.4
OXYH2	12	Z	100	3	0	40.8	40.8	0.7
V2XM	00	Z	100	2	0	8.5	40.4	39.5
V2XM	12	Z	100	4	0	13.6	41.5	39.3
WPKD	00	Z	100	7	0	33.0	33.0	0.7
WPKD	12	Z	100	9	0	8.9	10.3	5.1
ZCBP6	00	Z	100	6	0	13.8	26.7	22.8
ZCBP6	12	Z	100	7	0	22.0	45.4	39.7
03953	00	Z	100	29	0	8.8	17.0	14.6
03953	12	Z	100	31	0	12.0	15.3	9.5
04018	00	Z	100	28	0	8.7	20.5	18.6
04018	12	Z	100	31	0	11.4	22.0	18.8
04220	00	Z	100	29	0	49.9	50.2	5.9
04220	12	Z	100	30	0	42.3	43.9	11.8
04270	00	Z	100	26	0	10.0	24.6	22.5
04270	12	Z	100	30	0	9.4	23.0	21.0
04339	00	Z	100	27	0	7.5	15.0	12.9
04339	12	Z	100	29	0	10.2	17.0	13.6
04360	00	Z	100	28	0	8.7	19.8	17.8
04360	12	Z	100	30	0	20.4	22.9	10.5
08001	00	Z	100	26	0	24.9	28.8	-14.3
08001	12	Z	100	27	1	28.3	32.8	-16.5
08508	12	Z	100	27	0	8.9	9.2	-2.4
08522	12	Z	100	29	0	8.7	8.8	0.8
08594	12	Z	100	16	0	26.9	29.0	10.6
71600	00	Z	100	29	0	11.7	12.8	5.1
71600	12	Z	100	31	0	14.9	15.8	5.1
72201	00	Z	100	10	0	10.2	20.9	18.2
72201	12	Z	100	14	0	14.8	39.7	36.9
72402	00	Z	100	28	0	8.7	12.9	9.5
72402	12	Z	100	31	0	10.7	22.2	19.4
74494	00	Z	100	25	0	11.2	18.8	15.1
74494	12	Z	100	29	0	10.1	10.5	2.8
78016	00	Z	100	28	0	17.1	29.0	23.5
78016	12	Z	100	30	0	17.4	34.8	30.1

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures:

Period :One calendar month.

Data monitored :Reports from selected radiosonde TEMPs.

Area monitored :0°N - 90°N, 100°W - 40°E

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times :00, 12 UTC.

Level monitored :500 hPa.

Element monitored :GEOPOTENTIAL HEIGHT in metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
DBBH	00	Z	500	2	0	2.0	4.5	-4.0
DBBH	12	Z	500	5	0	5.0	5.7	2.8
DBLK	12	Z	500	27	0	9.0	20.4	18.3
EBUQ	12	Z	500	22	0	8.4	8.6	-2.0
ELML7	00	Z	500	12	0	7.8	9.3	-5.1
ELML7	12	Z	500	15	0	8.3	8.6	-2.1
FQFL	00	Z	500	9	1	17.2	17.2	0.6
FQFL	12	Z	500	11	0	13.3	14.3	5.4
FQFM	00	Z	500	8	0	11.3	12.7	-5.8
FQFM	12	Z	500	12	0	16.0	17.9	8.2
KHRH	00	Z	500	9	0	12.1	24.6	21.4
KHRH	12	Z	500	10	0	13.2	33.0	30.2
LDWR	00	Z	500	29	0	5.9	6.4	2.6
LDWR	12	Z	500	30	0	6.8	7.2	2.3
OXVH2	00	Z	500	6	0	9.6	14.5	10.8
OXVH2	12	Z	500	10	1	25.7	25.8	2.6
OXYH2	00	Z	500	5	0	52.3	56.3	21.0
OXYH2	12	Z	500	4	0	43.3	43.5	-4.3
V2XM	00	Z	500	3	0	6.2	21.3	20.3
V2XM	12	Z	500	5	0	5.0	28.2	27.8
WPKD	00	Z	500	7	0	13.9	14.6	-4.4
WPKD	12	Z	500	10	0	7.8	8.4	3.0
ZCBP6	00	Z	500	6	0	13.0	20.8	16.2
ZCBP6	12	Z	500	7	0	22.4	43.8	37.6
03953	00	Z	500	29	0	6.6	7.1	2.6
03953	12	Z	500	31	0	8.7	8.7	0.4
04018	00	Z	500	28	0	9.7	17.0	13.9
04018	12	Z	500	31	0	8.6	10.7	6.4
04220	00	Z	500	29	0	23.5	24.5	7.1
04220	12	Z	500	30	0	19.1	20.4	7.1
04270	00	Z	500	27	0	8.1	13.7	11.0
04270	12	Z	500	30	0	8.5	13.7	10.7
04339	00	Z	500	27	0	6.1	14.6	13.3
04339	12	Z	500	29	0	7.0	13.2	11.2
04360	00	Z	500	28	0	8.5	14.7	11.9
04360	12	Z	500	30	0	13.7	14.2	3.7
08001	00	Z	500	27	0	12.6	15.1	-8.2
08001	12	Z	500	27	1	14.0	18.8	-12.4
08508	12	Z	500	28	0	4.4	4.4	0.4
08522	12	Z	500	30	0	4.6	4.6	0.1
08594	12	Z	500	22	0	8.1	8.1	0.7
71600	00	Z	500	29	0	8.0	8.2	1.8
71600	12	Z	500	31	0	9.6	9.7	1.6
72201	00	Z	500	11	0	5.0	5.2	1.5
72201	12	Z	500	17	0	9.2	9.8	3.4
72402	00	Z	500	29	0	15.1	15.2	-1.8
72402	12	Z	500	31	0	6.3	8.0	4.9
74494	00	Z	500	28	0	7.9	7.9	0.7
74494	12	Z	500	30	0	6.0	6.6	2.9
78016	00	Z	500	28	0	15.7	21.9	15.3
78016	12	Z	500	30	0	10.5	19.8	16.8

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
DBBH	00	V	100	2	0	0	4.4	-2.4	1.5
DBBH	12	V	100	5	0	0	7.0	4.2	-1.2
DBLK	12	V	100	26	0	0	3.1	-0.9	0.7
EBUQ	12	V	100	12	0	100	8.7	-1.7	3.0
ELML7	00	V	100	12	0	50	9.6	-0.2	1.3
ELML7	12	V	100	13	0	30	8.8	-0.7	0.3
FQFL	00	V	100	9	0	55	3.2	-0.4	-1.1
FQFL	12	V	100	11	0	63	4.9	-0.6	0.1
FQFM	00	V	100	8	0	0	3.5	-0.2	-1.1
FQFM	12	V	100	11	0	0	4.2	0.8	-0.8
KHRH	00	V	100	8	0	100	9.0	-2.3	0.4
KHRH	12	V	100	7	0	100	7.4	-1.3	0.4
LDWR	00	V	100	29	0	0	1.8	0.3	0.2
LDWR	12	V	100	29	0	0	1.5	0.2	0.4
OXVH2	00	V	100	4	0	0	3.4	-2.3	-1.5
OXVH2	12	V	100	9	0	0	5.7	-0.1	-0.2
OXYH2	00	V	100	4	0	25	3.2	-0.7	0.8
OXYH2	12	V	100	1	0	0	1.5	0.9	-1.2
V2XM	00	V	100	2	0	100	2.2	0.5	0.1
V2XM	12	V	100	3	0	100	1.4	-1.0	0.1
WPKD	00	V	100	6	0	66	3.2	-0.3	-0.8
WPKD	12	V	100	7	0	85	3.1	1.2	0.2
ZCBP6	00	V	100	5	0	0	3.1	-0.7	0.0
ZCBP6	12	V	100	7	0	0	3.9	1.4	0.4
03953	00	V	100	29	0	0	2.2	0.0	0.8
03953	12	V	100	31	0	0	2.7	-0.1	0.7
04018	00	V	100	28	0	0	2.1	-0.4	-0.2
04018	12	V	100	31	0	0	2.2	0.0	-0.4
04220	00	V	100	29	0	0	2.0	-0.5	0.2
04220	12	V	100	30	0	0	2.1	-0.2	-0.2
04270	00	V	100	26	0	0	2.9	0.0	0.5
04270	12	V	100	29	0	0	2.7	0.3	0.5
04339	00	V	100	27	0	0	4.1	-1.5	0.5
04339	12	V	100	26	0	0	5.5	-1.0	0.7
04360	00	V	100	28	0	0	3.0	-0.6	-0.1
04360	12	V	100	30	0	0	1.9	-0.3	-0.2
08001	00	V	100	24	0	0	3.8	0.7	0.8
08001	12	V	100	26	0	0	3.8	0.2	1.4
08508	12	V	100	15	0	0	3.6	0.4	1.2
08522	12	V	100	28	0	0	4.6	-0.2	-0.3
08594	12	V	100	17	0	100	4.0	0.0	-1.4
71600	00	V	100	29	0	0	4.0	0.0	-0.4
71600	12	V	100	29	0	0	3.6	-1.0	-0.4
72201	00	V	100	10	0	0	3.2	1.0	0.0
72201	12	V	100	14	0	0	3.0	0.3	0.1
72402	00	V	100	29	0	0	3.3	-0.5	-0.6
72402	12	V	100	30	0	0	3.4	-0.5	0.4
74494	00	V	100	25	0	100	2.6	-1.0	-0.3
74494	12	V	100	29	0	100	2.4	0.3	0.1
78016	00	V	100	28	0	0	4.8	0.5	-0.2
78016	12	V	100	30	0	0	4.7	-1.1	0.4

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Aug 2004

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

```
 WMO   OBS                NUM     NUM      %
IDENT  TIME  ELM   LEV    OBS    GROSS    REJ     RMS    UBIAS    VBIAS


DBBH    00    V    500      2       0       0     7.6    -6.6      0.8
DBBH    12    V    500      5       0       0     7.4     1.0      3.5
DBLK    12    V    500     26       0       3     5.9    -2.1      0.9
EBUQ    12    V    500     14       0     100     8.3    -1.2      2.2
ELML7   00    V    500     12       0      50    10.4    -0.5      0.2

ELML7   12    V    500     13       0      30     9.9    -2.4     -1.8
FQFL    00    V    500     10       0      50     3.7     0.2     -0.3
FQFL    12    V    500     11       0      63     5.1    -1.4     -1.8
FQFM    00    V    500      8       0       0     4.2     1.2     -0.1
FQFM    12    V    500     12       0       8     6.4    -1.8      0.0

KHRH    00    V    500      9       0     100    11.7     1.2     -0.9
KHRH    12    V    500      9       0     100    10.0    -1.0     -1.0
LDWR    00    V    500     29       0       0     2.5    -0.3     -0.3
LDWR    12    V    500     30       0       0     2.5    -0.3      0.1
OXVH2   00    V    500      6       0       0     4.0    -1.4      1.2

OXVH2   12    V    500      8       0       0     3.9    -1.7      0.3
OXYH2   00    V    500      4       0      25     4.0     1.6     -0.6
OXYH2   12    V    500      2       0      50     3.4     2.0     -2.5
V2XM    00    V    500      1       0       0     4.3    -1.6      4.0
V2XM    12    V    500      5       0       0     3.2     0.1     -0.4

WPKD    00    V    500      5       0      80     3.2    -0.9     -2.1
WPKD    12    V    500      8       0      75     2.9    -1.8      0.9
ZCBP6   00    V    500      6       0       0     4.8     2.7      0.4
ZCBP6   12    V    500      7       0       0     2.9    -1.0     -0.4
03953   00    V    500     29       0       0     4.3     0.3     -0.8

03953   12    V    500     31       0       0     3.4     0.6      0.6
04018   00    V    500     28       0       0     3.0     0.6     -0.6
04018   12    V    500     30       0       0     3.7    -0.4     -0.3
04220   00    V    500     29       0       0     3.9    -0.4      0.3
04220   12    V    500     30       0       0     3.9     0.1     -0.6

04270   00    V    500     27       0       0     4.0    -0.7     -0.2
04270   12    V    500     29       0       0     3.6    -0.3      0.4
04339   00    V    500     25       0       0     5.0    -1.2      0.3
04339   12    V    500     29       0       3     5.7     1.2     -1.3
04360   00    V    500     27       0       0     3.7     0.2      1.7

04360   12    V    500     30       0       0     3.2    -0.4      0.1
08001   00    V    500     27       0       0     4.8    -0.5     -0.5
08001   12    V    500     28       0       0     4.3     0.9      0.3
08508   12    V    500     15       0       0     4.2     0.2      0.1
08522   12    V    500     30       0       0     3.9     0.2     -0.5

08594   12    V    500     21       0     100     4.9    -1.5     -2.0
71600   00    V    500     29       0       3     7.1    -0.7     -0.4
71600   12    V    500     30       0       0     3.7     1.1     -0.2
72201   00    V    500     11       0       0     2.6     0.3     -1.0
72201   12    V    500     17       0       0     3.0     0.1     -1.1

72402   00    V    500     29       0       0     3.6     0.7      0.1
72402   12    V    500     31       0       0     3.2     0.5      1.0
74494   00    V    500     28       0       0     3.4     0.2      0.0
74494   12    V    500     30       0       0     3.1     0.0      0.9
78016   00    V    500     28       0       0     4.0    -1.6     -0.3

78016   12    V    500     30       0       0     3.7    -0.7     -0.5
```

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45